

L9
1596
038

AA
AA 001 036 384
4

UC SOUTHERN REGIONAL LIBRARY FACILITY



FEB 1 192

NOV 3 0 1932

APR 21 1947

MAR 17 1964

NON-RENEWABLE

APR 17 1990

DUE 2 WKS FROM DATE RECEIVED

VPI/lw

Form L-9-5m-12, '25

Los Angeles

Form L 1

LB
1596
038

Industrial Education Survey

CHARLESTON, S. C.

CARLETON B. GIBSON, Director

47984
1920

1922
Summer Session
1921-22
Jen.

PREFACE

The Industrial Education Survey of Charleston, S. C., made in the Spring of 1920, was a study of local industries for the sole purpose of determining the forms of industrial education to be developed within the public schools, that the schools might more adequately serve the community. The Survey originated with the Board of City School Commissioners upon the recommendation of the Superintendent, and was instituted by resolution of the Board. It was not a critical study of the existing forms and means of public education except in so far as they were related to vocational training along industrial, commercial, and domestic lines.

The survey was therefore, carried on among its friends who constituted the population of Charleston. It was not, as is often the case, the result of any unfriendly attitude towards the schools. It therefore had the co-operation and support of the school authorities and the citizens generally.

THE ORIGIN OF THE SURVEY

When in the Spring of 1919 the Legislature of South Carolina authorized a tax levy for the support of public education sufficiently large to enable the Board of City School Commissioners of Charleston to develop industrial training in the public schools, it was determined upon recommendation of Superintendent A. B. Rhett to secure assistance and have an industrial survey made of the City to ascertain the vocational opportunities open to both boys and girls in industry, commerce, and the households; what courses were then being offered in the Public Schools bearing upon such training; and how these courses might be developed to meet such local demands as might be revealed by the survey. In October, 1919, Mr. Carleton B. Gibson* was engaged to have charge of the Survey, to select his own assistants. He secured as his assistants:

Mr. Charles H. Winslow, Director of Vocational Research for the State of Indiana, as Chief Executive in charge of the Industrial Survey. He was assisted by Prof. Charles S. Doggett, Director Technical Department, Clemson College, and State Supervisor of Industrial Training.

Mr. Paul S. Lomax, of the Commercial Education Division of Federal Board for Vocational Education, Washington, D. C., as Chief Executive in charge of the Commercial Survey.

Mrs. Henry L. Beck, ex-teacher, formerly resident of Washington, D. C., and Portland, Oregon, a housekeeper and club woman of Charleston, as Chief Executive in charge of the Housekeeping Survey.

A General Survey Committee as the auxiliary and local advisory body was organized, and consisted of the following citizens of Charleston:

GENERAL SURVEY COMMITTEE

Mr. M. V. Haselden, Chairman, The Macmurphy Co., East Bay St., President Board of Trustees, High School of Charleston.

Rev. Geo. J. Gongaware, Secretary, 31 Pitt St.

Mr. Geo. H. Moffett, 55 Broad St., Chairman, City Board of School Commissioners.

Mr. A. B. Rhett, Superintendent of Schools.

Mr. J. J. Anderson, General Manager, Anderson Lumber Co., W. End Broad St.

Mr. M. B. Barkley, Vice-President, The Cameron & Barkley Co., 160-164 Meeting St.

Mr. John O. Breyer, Master Mechanic, Southern R. R.

Mr. C. V. Boykin, General Manager, Valk-Murdoch Co.

Mr. M. A. Condon, President, Retail Merchants' Association, 431 King St.

Mr. John J. Furlong, 420 King St.

Mrs. Ashley Halsey, 51 George St.

*Mr. Gibson, as superintendent of the Columbus, Ga., schools had been a pioneer in the South in Industrial Education. He had later been for six years the President of the Mechanics' Institute of Rochester, N. Y., and had developed the courses in the mechanical trades in the University of Beaune, France, for the American Expeditionary Force.

Mrs. Leland Moore, 12 Franklin St., Chairman, Educational Committee, Civic Club.

Miss Louisa B. Poppenheim, 31 Meeting St.

Mr. N. J. Sottile, 221 King St.

Mr. T. C. Stevenson, care of Charleston Engineering & Contracting Co., Broad St.

Mrs. W. J. Storen, 232 Calhoun St.

Mr. J. F. Riley, John F. Riley Foundry & Machine Works, 2-12 South St.
Lieut. A. A. Smith, U. S. N., Navy Yard.

Mr. Theo. Thompson, 8 Elizabeth St.

Mr. F. J. Torlay, Chairman Committee on Education, Central Labor Union.
Mr. G. E. Daniell, Navy Yard.

SUB-COMMITTEES

In order that the survey might have the benefit of expert counsel and direct support of representative citizens specially interested, in each of the three branches of the Survey, sub-committees were appointed at the first meeting of the General Survey Committee.

Among those who served on the Sub-Committee on the Industrial Survey were the following:

Mr. John McCrady,

Mr. A. J. Riley,

Mr. B. P. Carey,

Mr. Carl Knutsson,

Mr. J. P. Denham,

Mr. J. E. Smith,

Mr. W. H. Cogswell,

Mr. H. S. Miles.

The Survey had also the active valued services of:

Mr. E. T. Healy, Principal of Industrial School.

Mr. Carl G. Planck, Industrial Arts, Boys' High School.

Mr. H. O. Strohecker, Principal Bennett School.

Mr. Geo. C. Rogers, Principal Courtenay School.

CHARLESTON AS AN INDUSTRIAL CITY

Charleston is a typical Southern seaport city with a population of 68,000. It is happily located with the Ashley River on one side, the Cooper River on another, and the bay on the third. It, therefore, has an excellent natural harbor, with abundant docking facilities and with its improving railroad service is rapidly growing as a manufacturing and exporting city. In 1918 the following facts were published in *The Evening Post* as a result of an investigation made by the Chamber of Commerce:

"Charleston's manufacturing plants in 1917 turned out products worth \$36,663,945, an increase of \$17,685,305 over 1913, when a census of manufactures was last taken. Charleston's 190 plants employ 14,437 people and pay them \$10,388,087. The capitalization in 1917 was \$29,268,513, an increase of \$5,302,113 over the capitalization for 1913. The fertilizer and acid industry continued to hold first rank. Textile products leaped to second place last year, displacing lumber and wood products, which took third rank. This ranking, however, does not take into consideration the Charleston Navy Yard, which is second in capitalization and value of output and first in number of employees and payroll.

"Every concern of the 190 reported in this census comes under the industrial classification of the United States census bureau. It was found that a number of concerns had formerly been erroneously listed as manufacturing plants; these were excluded.

"It is stated that the figures of the Charleston Navy Yard are not official and are approximately being based on estimates or public statements by officials. In the case of the capital, this is a matter of public record. The number of employees has been given in the newspapers from time to time. The payroll estimate is about the same as that given recently in public by officers.

"The census of manufacturing in the Charleston industrial district for 1917, with comparison with 1913, follows:

	No.	Capital	Annual Products	Persons Employed	Annual Payroll
Bakery products	26	\$ 292,750	\$ 790,448	393	\$ 190,875
Buggies, wagons, harness.....	4	248,000	114,600	82	42,568
Candy	4	45,600	134,541	62	23,934
Cigars and tobacco.....	2	196,200	642,371	429	148,910
Drugs and chemicals.....	4	186,000	900,000	86	81,500
Fertilizers and acid.....	11	7,625,000	10,215,000	2,547	1,107,851
Flour and grist.....	2	30,000	310,000	34	19,800
Foundries and marine railways.....	5	803,000	943,000	557	259,509
Ice	4	605,750	615,000	184	76,000
Ice cream	6	23,200	116,500	48	19,600
Lumber and wood products.....	15	3,134,000	2,857,000	1,862	921,503
Mineral and soda water.....	13	300,000	553,560	113	85,234
Monuments and stone.....	6	30,000	42,529	48	18,850
Printing and publishing.....	16	409,000	823,900	436	306,780
Steam laundries	4	48,500	180,000	171	60,400
Textile products	5	1,715,000	4,849,550	1,207	613,112
Miscellaneous	62	7,576,513	6,075,946	1,678	1,156,661
Totals	189	\$23,268,513	\$30,163,945	9,937	\$ 5,133,087
Charleston Navy Yard	1	6,000,000	6,500,000	4,500	5,250,000
Grand total	190	\$29,268,513	\$36,663,945	14,437	\$10,383,087
Totals in 1913.....	150	23,966,400	18,978,640	10,000	4,259,407
Increase over 1913.....	40	\$ 5,302,113	\$17,685,305	4,437	\$ 6,123,680

THE PURPOSE OF THE SURVEY

The Board of City School Commissioners adopted the following statement of the aims, scope, and purpose of the Survey, which also had the approval of the General Survey Committee:

"The City Board of Public School Commissioners for the City of Charleston, S. C., desiring to formulate some appropriate and comprehensive plan of industrial education suited to the needs of the city, determined upon a study of the trades and industries of the city to aid in the organization of an educational program. The Board has also appointed a general survey committee and sub-advisory committees to carry out the aims and purposes of the survey.

"The aims and purposes of the survey may be stated as follows:

"1. To gather detailed information concerning employment conditions in the dominant local industries and data relative to the needs for vocational training.

"2. To obtain expressions from both employers and employees as to the best way of meeting this demand for vocational training, should the demand be found to exist.

"3. To make specific recommendations as to types of courses to be organized.

"The fact that there has recently been made available to the Board funds to support trade educational courses—(day, evening and part-time or continuation)—together with the fact that other industrial communities comparable with Charleston have already established such courses and maintained them successfully, created a presumption in favor of the inauguration of similar lines of work, yet the need can be determined definitely only after the consideration of certain facts which may be revealed by studies of industrial, commercial and domestic employment conditions.

"To justify the establishment of day unit courses the study of industries, commerce and the home must show that they can properly absorb the learners trained in such courses, in order that no injustice may be done to either the boys or girls thus trained or to the men and women already employed in the trade; the study must show that the training facilities already available are not adequate; the study must show a willingness on the part of the employers and employees to recognize the training to be given in order that there may be an open door of opportunity for the graduates. If these are shown by the studies made, then the courses may be given to the benefit of the boys and girls on the one hand, commerce, industry and the community on the other hand.

"To justify the establishment of evening trade improvement and part-time or continuation classes, the studies must show that in any particular line a sufficiently large number would be interested to constitute an instruction group and that there is a certain definite type of training needed which would benefit those employed in making it possible for them to prepare for service and earnings and to become better and more intelligent citizens."

PART I

CHARLESTON PUBLIC SCHOOLS

The Elementary Schools of Charleston are entirely under the City Board of School Commissioners. Secondary work is divided between the Memminger City High for girls, which is under the City Board of Commissioners, and the City High School for boys, which is under the direction of a separate Board of Trustees. This High School for Boys is one of the oldest in the South and its long list of graduates includes names of many of Charleston's most prominent citizens. It is supported by an annual appropriation from the City Council, an annual appropriation from the City Board of School Commissioners, and a small income from other sources.

For more than eighty years it has been doing the academic work for preparing boys for colleges and universities. In more recent years it has developed commercial and technical courses.

OUTLINE OF WORK—WHITE SCHOOLS

COMMERCIAL WORK

The High Schools. There is a commercial course in both the Boys' High School and the Girls' High for those pupils who desire to enter into commercial work.

The course at the Boys' High School is a four-year course, including typewriting, bookkeeping, stenography, and the elements of commercial law.

The course at the Girls' High School is at present a three-year course, including typewriting, bookkeeping, stenography, commercial arithmetic and the elements of office practice. This course will probably in the near future be made into a four-year course. Consideration is also being given to instituting a briefer two-year course for those pupils who are unable to remain to complete the full High School course.

INDUSTRIAL WORK

In the Boys' High School, there is a four-year course which includes wood-working, bench work, cabinet making, wood turning, mechanical drawing, and the elements of practical and theoretical electricity.

In the Girls' High School, there is a four-year industrial or home-making course which includes four years of sewing and millinery and three years of domestic science, also an optional one-year course in drawing and design, the special object of which is correlation with the domestic arts course.

In the Eighth Grade, all girls are required to take domestic science.

The Elementary Schools. In the Grades the industrial or manual training work is as follows:

In the Seventh Grade, all girls are required to take domestic science; all boys are required to take bench work.

In the Sixth Grade, an optional afternoon course in sewing is offered to the girls* and a course in bench work is offered to the boys.

All pupils are required to take drawing during the whole of the seven-year elementary school course. In the primary grades, in connection with the drawing, the pupils do a certain amount of paper cutting, folding, etc.

*Recently discontinued.

Colored Schools. All industrial work for colored pupils is given at the Colored Industrial School. This school has the Fifth, Sixth and Seventh Grades, in which grades instruction is given in cooking, sewing, millinery and laundry work, and to the boys in bench work, carpentry and to a certain degree in brick-laying and painting. In this school are also located three grades known as Advanced Grades, corresponding roughly to the Eighth, Ninth and Tenth Grades, which grades are composed of those colored pupils who desire to fit themselves for teaching. In connection with the ordinary book work, these pupils are given some industrial work.

Night Schools. A special night class giving instruction in architectural and mechanical drawing is operated two evenings in the week.

TEACHING STAFF

Boys' High School—

One Commercial Teacher, full time.

One Head of Industrial Department who gives his full time to supervision and to teaching vocational subjects.

One Teacher Woodworking and Mechanical Drawing, whole time.

One Teacher Woodworking, half time.

Girls' High School—

One Commercial Teacher, full time.

One Teacher of Domestic Science, full time.

One Teacher of Domestic Arts, full time.

One Teacher of Domestic Science, part time (1/5).

One Teacher of Drawing and Design, part time.

In the Grades—

One Teacher of Domestic Science, part time (4/5).

One Teacher of Woodworking, half time.

Colored Industrial School—

One Teacher of Woodworking, full time.

One Teacher of Sewing and Millinery, full time.

Two teachers of Cooking, Laundry and Agriculture, full time.

Night School—

One Teacher of Mechanical Drawing, who is, also, the head of the industrial department, Boys' High School.

THE TIME ELEMENT

Boys' High School—

The boys have in the commercial and industrial departments from forty per cent. to fifty cent. of a five-hour school day, with fifteen to thirty minutes recess, to the commercial or industrial work, and the remainder of the regular book work.

Girls' High School, Commercial Department—

The girls give twenty per cent. of a five-hour school day, with thirty minutes recess, to the commercial work in the First Year; in the Second Year, sixty-six and two-thirds per cent., and in the Third Year, sixty-six and two-thirds per cent.

Industrial Department—

The girls give sixteen and two-thirds per cent. of a five-hour school day,

with thirty minutes recess, to the industrial work in the First Year; in the Second Year thirty-three and one-third per cent., and in the Third Year, forty per cent. to fifty per cent., and in the Fifth Year, forty per cent. to fifty per cent.

In the Grades—

Sixth Grade, one hour per week.

Seventh Grade, one and one-half hours per week.

Eighth Grade, one and one-half hours per week.

In the Night Schools—

Three hours per week.

ROOMS AND EQUIPMENT

At the Boys' Schools—

Commercial Department in regular school building, equipped with typewriters, etc.

Industrial Department in its own building, having wood-working shop, lathe shop, drawing room and lecture room. Wood-working shop equipped with benches and necessary tools. Lathe shop equipped with lathes.

At the Girls' High School—

Two domestic kitchens, fully equipped.

Sewing room, equipped with sewing machines, cutting board, dress frames, etc.

Commercial room, equipped with typewriters, adding machine, filing devices, rotary mimeograph, etc.

Drawing room, forty drawing tables, models, etc.

In the Grades—

Two woodworking shops, equipped with benches and tools for twenty-four pupils each.

Two domestic science kitchens, fully equipped, one of which is included in the two mentioned at the Girls' High School.

N. B. The new Elementary School now in process of construction will be provided with woodworking shop and domestic science kitchen.

OUTLINE OF WORK—COLORED INDUSTRIAL SCHOOL

CARPENTRY

Fifth Grade. Two periods of two hours each.

Class problems are given to teach methods of construction and give practice in the use of tools.

Problems such as: sleeve board, bread board, broom holder, table mat, hat rack, or book rack.

Sixth Grade. Two periods of two hours each.

Cabinet work continued, problems of more difficult construction being given.

Seventh Grade. Two periods of one and one-half hours each.

Cabinet work continued and elementary house construction begun.

Advanced A Grade. Two periods of one and one half hours each.

Cabinet work continued but most of the time is spent on house construction, simple models of houses constructed by pupils on scale of one inch equals one foot.

Advanced B Grade. Two periods of one and one-half hours each.

House construction continued. Models of houses of more complicated construction are undertaken, the pupils working in groups of four on a model. In the grade below the models are built by larger groups.

Advanced C Grade. (Tentative.) Two periods of one and one-half hours each.

House construction continued, the work being of an individual character as much as possible. Each pupil is encouraged to build a model from his own ideas. House design is studied.

AGRICULTURE

Aims and Course. The aims of this department are to arouse the interest of the pupil in Nature, to familiarize him with the practical work of the truck farm and to teach him the elements of the science of agriculture.

Since truck farming is this region's specialty, practical work is given on a two and one-half truck plot. Most of the time set aside for practical work, however, is put on the pupils' gardens at school. The group plan has been found best. Four pupils to a garden 30 x 15 feet; each pupil studying agriculture works on a garden, planting spring and fall vegetables. The school furnishes seed and fertilizer. School tools are used. Each pupil is given a fourth of the products from the garden he or she tilled.

Immediate application of the lessons by the pupil to his or her home (*i. e.*, city) conditions is encouraged. A Home Improvement Contest (emphasizing back-yard vegetable gardens) has been conducted for each four years and has been successful.

Occasional trips to the Charleston Museum are taken by the higher classes. Museum exhibits are received at the school. These are helpful.

Course by Grades—

Fifth Boys—Time—120 minutes per week.

Sixth Boys—Time—175 minutes per week.

Fifth Girls—Time—60 minutes per week.

Sixth Girls—Time—120 minutes per week.

Seventh Boys—Time—105 minutes per week.

Seventh Girls—Time—60 minutes per week.

Topics—

(Topics mentioned in any course are, in the main, interchangeable according to conditions.)

1. Care of poultry.
2. Nature of plants.
3. Making of a garden.
4. The soil.
5. Plant enemies.
6. Farmer's friends.
7. Propagation of plants.
8. Flower garden.
9. Care of livestock.
10. Fertilizers.

Practice. In pupils' gardens and for boys, in addition, a third of time in field.

LAUNDRY

Fifth Grade is divided into three sections, each section being given two periods of one and one half hours each a week.

This grade launders simple flat pieces such as towels, handkerchiefs, table linen, bed linen, and their own uniforms. Special attention is given to pressing and folding.

Sixth Grade is divided into three sections, each being given two periods of two hours each a week.

The laundry given this grade is finer and more difficult than that given the fifth grade.

Flannels, linen scarfs, body linen, and articles that require clear starching. Methods for removing stains are taught in this grade.

Seventh Grade is divided into two sections, each being one one-hour period a week.

This grade launders the finest pieces such as laces, collars and cuffs, shirt waists, dresses and men's shirts.

Laundry in this grade is more of a review of the work given in the fifth and sixth grades.

DOMESTIC SCIENCE

Sixth Grade. First, equipment shown and explained.

Lessons under the following general heads are then given: Beverages, Cereals, Batters (pour, drop, dough), Soups (with and without stock).

Thickening agents: (a) Junket tablets.

(b) Flours and Starches.

(c) Eggs.

Meats: Boiling (three methods), Frying, Roasting.

Eggs: Fried, Scrambled, Poached, Omelets, Stuffed.

Boston Brown Bread, Baked Beans.

Vegetables (white sauce is also given with these lessons).

Salads.

Cakes.

Desserts (hot and frozen).

Seventh Grade. The second year's work is an application of the first year's work in the making up of menus for breakfasts, luncheons, dinners, and suppers; the serving of these meals and table service in general. New recipes are also given and worked up. Bread lessons receive special attention.

With both the above grades the using of left-overs is stressed, the wasting of any food or material strongly discouraged and economy practiced in every line.

The use of ranges, of gas, and of stoves, is taught and also in this connection meter reading.

Candy lessons are usually given at the Christmas season.

Advanced Grade. Lectures on simple dietetics, *i. e.*, human nutrition, food values, etc., are given (this is practically the only class given theory). Practical cookery is given along lines pertaining to the sick room and invalids, for the benefit of those training for nurses. Management of cooking classes of lower grades is supervised by the instructor for those students training for teachers. The care and management of the home is a part also of each grade's work.

Advanced A Grade. Simple dietetics and also some practical in review of Seventh Grade work.

Advanced B Grade. The study of dietetics is continued and special attention is given invalid cookery and the management of classes for lower grades.

SEWING

Fifth Grade. Two periods of one and one-half hours each week.

Use of tools, primary stitches by hand-caps, by hand bags, seams, simple work on machines, short study of textiles.

Sixth Grade. Two periods of one and one-half hours each per week. Two caps, apron.

Twenty models, stitches, mitering corners, etc. Study of textiles.

Seventh Grade. Two periods of two hours each per week.

Ten models, hemstitching, hemming, scalloping. Making of drawers, petticoat, middy. Study of textiles.

Advanced A Grade. One period of one and one-half hours per week. Middy or tailored waist, skirt, dress (plain).

Advanced B and C Grades. One period of one and one-half hours per week. Dress (fancy).

Advanced study of textiles, methods of teaching sewing, working out of clothing budget.

OUTLINE OF WORK—WHITE ELEMENTARY SCHOOLS

MANUAL TRAINING

SEVENTH GRADE

First Semester—Ninety minutes per week.

1. Reading of mechanical drawings.
2. Names, use, and care of tools.
3. Squaring of board.
4. Making of bench hook.
5. Making of bench camp stool.
6. Making of bench wind mill.

Sixth Grade—Sixty minutes per week.

1. Reading of mechanical drawings.
2. Names, use, and care of tools.
3. Squaring of board.
4. Making of bench hook.
5. Making of tie rack.

DOMESTIC SCIENCE

Seventh Grade—Ninety minutes per week.

Registration, measuring, plan of work.

Beverages.

Cereals.

Vegetables.

Eggs.

Biscuit and Cake.

Candy.

Baking.

Soups.

OUTLINE OF WORK—MEMMINGER (GIRLS) HIGH SCHOOL

DOMESTIC SCIENCE

Fifth Year. Six 40-minute periods per week.

Dietetics: Application of the five food principles to bodily needs; their chemical changes in digestion, utilization, etc. Diet in disease, and under all the varying conditions of health. Infant feeding, diet for the aged.

Practical Cookery: Menu making; table service; meal planning; *i. e.*, balanced rations for the family of two adults and three children, with particular reference to the individual nutritive requirements and the cost of food in relation to the family budget.

Fourth Year. Six 40-minute periods per week.

Work here based on the text-book, "Foods and Household Management," by Kinny and Cooley. Additional work along lines of experimental cookery, especially in use of various substitutes for wheat and meat.

Third Year. Five 40-minute periods per week.

Elementary principles of First Year work expanded. Continued steps in theory with a working knowledge of household processes, food materials and principles, production, manufacture and use of "left-overs."

First Year (Required of all pupils). Two 40-minute periods per week.

First steps in practical home cookery, beginning with simple recipes and following a logical sequence of order. First steps in theory and a study of food composition.

DOMESTIC ARTS

Fifth Year. Four 40-minute periods.

1. Silk waist.
2. Wool dress.
3. Embroidery (corset cover).
4. Silk dress or wash suit.
5. Class Day (?) dress.
6. Fine dress hat to match dress.
1. Use of wire frames.
 - a. Use of fine cloth, net and maline on hats.

House Decoration—

1. Problems—framing pictures, hanging pictures, use of curtains and draperies, home comforts.

Household Economics—

Textiles—Use of fabrics; cost of clothing; how estimated; cost regulated.

Fourth Year. Six 40-minute periods per week.

1. Winter millinery.
2. Wool dress.
3. Lingerie waist of fine cotton.
4. Silk dress.
5. Sport hat of cotton cloth.

Textiles—

1. Review studies of fabrics.
2. Adulteration and imitation of fabrics.

3. Textile economics.
- Buying textiles.
- Care of textiles.
- Laundering.
- Renovating.

Third Year. Five 40-minute periods per week.

1. Dark underskirt.
2. Advanced lingerie.
3. Middy blouse.
4. Wool skirt; special use of woolens and worsteds.
5. Spring millinery.
6. Linen or heavy cotton street dress.
7. Sheer afternoon dress.
8. Bathing suit or child's dress.

Textiles. Review study of cotton.

- Process in wool manufacture.
- Study of fiber (production, cleansing).
- Study of fabrics, appearances, uses, prices.

Second Year. Five 40-minute periods per week.

Hand Sewing—

1. Sewing bag.
2. Sewing apron.
3. Hemstitched collar or handkerchief of linen.

Machine Sewing—

4. Combination.
5. Nightgown.
6. Petticoat.
7. Corset cover.
8. Knickerbockers.

Textiles—

1. Study of cotton plant.
2. Study of flax plant.

Fiber; production; manufacture by-products. Fabrics, use and price, appearance.

COMMERCIAL COURSE

Time—Three school terms (nine months, of four weeks each).

Third Year

Stenography, 5 periods per week.

Fourth Year

Bookkeeping and Penmanship, 5 periods per week.

Stenography and Shorthand Penmanship, 5 periods per week.

Typewriting, 5 periods per week.

Commercial Arithmetic, 3 periods per week.

Fifth Year

Bookkeeping and Penmanship, 5 periods per week.

Stenography and Office Practice, 5 periods per week.

Typewriting, 5 periods per week.

Commercial Arithmetic and Law, 3 periods per week.

Penmanship—

Muscular movement, "Palmer Method."

Bookkeeping—(First term or Four Year class).

The fundamental principles of bookkeeping and accounting, and the practical application of these on the various books of original entry.

In addition to this the student is taught the importance of business forms and their relation to business transactions.

Bookkeeping—(Second term or Fifth Year class).

The second set is intended to teach the principles of partnership bookkeeping, the advantages of special ruling in the cash book, the carbon copy sales book, a popular form of the purchases book and other short cut methods helpful to the bookkeeper.

Shorthand Penmanship—Muscular movement (Fourth and Fifth Year classes).

The most difficult shorthand outlines are selected from the lessons each day and practiced from eight to ten times before taking up the shorthand lesson.

Stenography—(Third Year class).

A thorough foundation in the principles of Gregg Shorthand.

Stenography—(Fourth Year class).

Review of Third year work.

Gregg Speed Studies continued.

Advanced Dictation.

Stenography—(Fifth Year class).

A special course in phrasing, business letter writing, legal forms, etc.

Speed in writing notes is considered from the beginning of the course and can only be attained by continual study, reading and application. Practice and a thorough knowledge of the system develops speed.

Office Practice—(Fifth Year class).

General practice in filing, use of office machines, handling mail, etc.

OUTLINE OF WORK—(BOYS) HIGH SCHOOL OF CHARLESTON

INDUSTRIAL DEPARTMENT

WOOD SHOP

Fourth Class (First Year)—Projects in elementary furniture making five hours per week.

All work from blue prints.

Third Class (Second Year)—Furniture making. Use woodworking power tools, three hours per week. Work from blue prints.

WOOD TURNING

Third Class (Second Year)—Spindle and face plate turning. Three hours per week. Work from blue prints.

Second Class (Third Year)—Advanced projects in wood turning. Three hours per week. Work from blue prints.

PATTERN MAKING

First Class (Fourth Year)—Plain and turned patterns. Core boxes. Built up segment patterns.

MECHANICAL DRAWING

Fourth Class (First Year)—Lettering. Theory of Three Plan Projection. Use of Third Quadrant. Two and one-half hours per week. "Babbitt's Mechanical Drawing."

Third Class (Second Year)—Detailing of machine parts. Inking. Two hours per week. "Babbitt's Mechanical Drawing."

Second Class (Third Year)—Geometry exercises, intersection of solids, development of surfaces, standard screw surfaces, nuts and bolts. Work from lectures, models and blue prints. Three hours per week.

First Class (Fourth Year)—Machine detailing and assembly drawing from working models. Plotting and calculation of graphic statics. Use of slide rule, planimeter, etc. Three hours per week.

ELECTRICITY

Second Class (Third Year)—Magnetism, voltaic and current electricity, electromagnetism, volt and ammeter power, etc.; its calculations. "Swoop's Lessons in Practical Electricity," p. 228. Two hours per week.

ELECTRICAL LABORATORY

Second Class (Third Year).—Experiments paralleling text. Practical applications. Two hours per week.

TRIGONOMETRY

Second Class (Third Year)—Solution of Right Triangle. Use of Logarithms. Solution of Simple Equations by Logs. "Wentworth-Smith." Three hours per week.

First Class (Fourth Year)—Solution of Oblique Triangle. Areas. Plane sailing. Solution of exponential and other equations by logarithms. "Wentworth-Smith." Three hours per week.

MECHANICS

First Class (Fourth Year)—Materials of construction. Simple and cantilever beams. Bending moments. Centers of gravity. Moments of Inertia. Columns. Shafts. Calculation and design. Two hours per week. "Merriman's Mechanics of Material."

MENSURATION

Fourth Class (First Year)—Rules and definitions of Plane and Solid Geometrical figures; calculation of their areas and volumes. Practical application to building. "Wells' Arithmetic," pp. 151-190. Two and one-half hours per week.

Third Class (Third Year)—Estimation and calculation of materials in wood, brick, concrete and steel. Specific gravity. Center of gravity. Calculation of irregular volumes and solids by Trapezoidal and Simpson's Rules. "Lectures." Two hours per week.

COMMERCIAL DEPARTMENT

CURRICULUM

Fourth Class (First Year)—

First Term. Business forms, Text, "First Book in Business Methods," by Teller and Brown. Two hours per week.

Powers and Loker's "Exercises in Rapid Calculation," Addition, Multiplication, and Division. Two hours per week.

Second Term. Twentieth Century Bookkeeping, Elementary, Part I. Rules of Debit and Credit, and Rules for Journalizing, Definitions, and Exercises. Three hours per week. Rapid Calculation. Special stress on Interest and Discount. Two hours per week. Exercises in Business Arithmetic.

Third Class (Second Year)—

Bookkeeping, two or three hours per week.

"Complete Practical Bookkeeping." Elementary Exercises, use of Day-book, Journal and Ledger.

Phonography. Two or three hours per week.

Text: "A Shorter Course in Munson Phonography." Words and phrases. Commercial Law. Two or three hours per week.

Text: "Peters' Commercial Law." From origin of commercial law, its principles and application, through the history of a law suit; entire text.

Lectures. One or two hours per week.

Business Arithmetic, Cash Register System of Bookkeeping, Time Clock and Timekeeping, Pay Rolls, Meters, Business Measurements, and Problems.

Second Class (Third Year)—

Bookkeeping. Three hours per week.

Text: "Complete Practical Bookkeeping," pages 73-127, model sets in bookkeeping of wholesale and retail business, illustrating use of Sales Book, Cash Book, Journal, Customers' Ledger, General Ledger, Bill Books, etc.

Phonography. Three hours per week.

Text: "A Shorter Course in Munson Phonograph."

First Term: Page 70 through text.

Second Term: Easy Dictation.

Typewriting. Three hours per week.

Text: New Practical Typewriting, Part I.

Lectures. One hour per week.

Product and Consumption, Office Duties.

First Class (Fourth Year)—

Bookkeeping. Three hours per week.

Text: "Complete Practical Bookkeeping," page 127 through text; model sets in bookkeeping of retail business, joint stock company, corporation and banking.

Phonography. Three hours per week.

Text: "Manual of Gregg Shorthand;" Dictation Exercises picked at random.

Typewriting. Three hours per week.

Text: "New Practical Typewriting;" Part II.

Lectures. One hour per week, same as Second Class.

TABULATION

RESULTS OF CENSUS TAKEN DURING SUMMER OF 1919

MISS GRAHAM, Attendance Officer

White children from six to fourteen years of age—

In the Public Schools.....	3,069	
In Parochial Schools	469	
In Private Schools	339	3,877
Children not in school.....	508	
Children recently come to Charleston from other cities	118	4,503

Colored children from six to fourteen years of age—

In the Public Schools.....	1,617	
In Parochial Schools	277	
In Private Schools	1,422	3,316
Children not in school.....	913	
Having recently come to Charleston from other cities	94	4,323
Total.....		8,826

COMPULSORY ATTENDANCE AGE

White children from 8 to 14 years of age

Not in School—

Boys	42	
Girls	33	75

Colored children from 8 to 14 years of age

Not in School—

Boys	180	
Girls	195	375

MEMMINGER SCHOOL

1918-1919

Age and Grade Census—Girls' High School

Year	12	13	14	15	16	17	18	19	20	Total
1	14	66	50	26	7					163
2		8	36	39	9	3				95
3		1	13	38	27	10	6			95
4			2	4	27	10	8	2		53
5				2	16	32	1	5		56
Normal					2	4	1	1	1	88
Total.....	14	75	101	109	86	57	19	8	1	470

Under age	62	13.2%
Normal age	331	70.4%
Over age	77	16.4%

AGES OF BOYS—TOTAL—WHITE ELEMENTARY SCHOOLS—1918-1919

Census taken April 7, 1919.

Grade	Under 6	6	7	8	9	10	11	12	13	14	15	16	Total
First	3	161	126	64	29	13	5	1	1				403
Second	4	78	76	43	29	11	4	2					247
Third		9	76	75	47	26	14	3	2				252
Fourth			19	66	76	47	38	10	8				264
Fifth				17	59	53	44	38	10	4			225
Sixth					1	19	61	54	38	13	5	1	192
Seventh						1	13	45	57	18	8	3	145
Total	3	165	213	235	231	244	216	200	149	51	17	4	1,728

Under age	86	5%
Normal age	1,063	61.5%
Over age	579	33.5%

BOYS AND GIRLS

Under age	178	5.2%
Normal age	2,145	62.8%
Over age	1,094	32.0%

AGES OF GIRLS—TOTAL—WHITE ELEMENTARY SCHOOLS—1918-1919

Census taken April 7, 1919.

Grade	Under 6	6	7	8	9	10	11	12	13	14	15	16	17	Total
First	2	156	86	62	24	10	3	1			1			345
Second	4	90	81	40	15	9	2				2			243
Third		9	85	61	47	18	10	2			4			236
Fourth		1	22	77	77	40	29	11	5		1			263
Fifth				14	69	63	33	29	6	11				216
Sixth					24	68	64	34	15	7	2			214
Seventh						16	48	56	26	19	6	1		172
Total	2	160	186	250	216	242	218	187	132	58	29	8	1	1,689

Under age	92	5.4%
Normal age	1,082	64.1%
Over age	515	30.5%

AGE AND GRADE CENSUS—1918-1919

Ages of Boys (All Colored Schools)

Under age	8	1%
Normal age	222	27.4%
Over age	580	71.6%
	810	

Ages of Girls (All Colored Schools)

Under age	9	.7%
Normal age	351	28.9%
Over age	856	70.4%
	1,216	

Ages of Boys and Girls (All Colored Schools)

Under age	17	.8%
Normal age	573	28.9%
Over age	1,436	70.9%
	2,026	

Census taken April 7, 1919.

MEMMINGER SCHOOL (GIRLS' HIGH SCHOOL)
Elimination Table—Session 1918-1919 April 7, 1919

Year	21	20	19	18	17	16	15	14	13	Total
1						10	835	988	8	12
2					65	96	556	988	861	13
3			3	99	986	498	352			18
4				828	536	4	899	9 8		9
5				5 8	1	6				3
Normal				4	1 8					0
Total			3	8	10	10	12	11	1	55

Reasons for Withdrawal

1. Necessity to go to work.....	3
2. Trouble at school.....	2
3. Tired of school.....	5
4. Desire to go to work.....	3
5. Needed at home.....	7
6. Ill health	7
7. Truancy	0
8. Leaving City	16
9. To private or parochial school.....	11
10. To be married.....	1

ELIMINATION TABLE

Session 1918-1919—April 7, 1919 G'RLS

Grade	16	15	14	13	12	11	10	9	8	7	6	Total	
First						8	1	5	8886	8886	8888	86	27
									1183	8			27
									1188				
									588				
									8888				
Second			1			5	3888	6985	8	888			21
							88	8					
							8888	8888	9889				
Third			1	1		8898	9888	8	6				32
						888	8889						
						9							
Fourth			56	188	86	6818	8888	88	8				24
						88	568						
							10						
Fifth			44	1418	1188	8859	8188	888					22
					3								
Sixth	3	8856	8345	8888	8666	8							22
	4		54	1									
18 years.													
Seventh	8	8	81	8861	888	8							13
Total Elim'd.....	2	8	16	18	13	26	31	29	8	7	2	161	

Reasons for Withdrawal

1. Necessity to go to work.....	14
2. Trouble at school.....	0
3. Tired of school.....	5
4. Desire to go to work.....	7
5. Needed at home.....	10
6. Ill health	14
7. Truancy	0
8. Leaving City	100
9. To private or parochial school.....	7
10. Death	1
11. Cause not ascertainable.....	3

(Child transferred to another public school not to be counted leaving school.)

ELIMINATION TABLE

Session 1918-1919—April 7, 1919 Boys

Grade	16	15	14	13	12	11	10	9	8	7	6	Total
First							37	9888	888	8968	8888	
								8888		886	8988	
								891		9	86	35
Second			6	83	4	8881	868	8988	86			
						9178		8888				
							99					
								8888				
Third			1	11	8888	8838	8888	8889	8			31
						8888	888					
							8					
Fourth		88	4411	8414	8868	88	988	88				33
						19						
						8						
Fifth		4	8484	8827	8444	1888	888					40
			4	8	10	4888	685					
Sixth		1	8	2888	8803	899	8					31
Seventh	8	8	111	4648	218	8						14
				8411								17
Total Elim'd.....	1	3	13	31	31	34	24	34	12	8	10	201

Reasons for Withdrawal

1. Necessity to go to work.....	19
2. Trouble at school.....	3
3. Tired of school.....	3
4. Desire to go to work.....	16
5. Needed at home.....	3
6. Ill health	12
7. Truancy	4
8. Leaving city	125
9. To private or parochial school.....	14
10. Death	1
11. Cause not ascertainable.....	1

(Child transferred to another public school not to be counted leaving school.)

ELIMINATION SCHEDULE

Session 1918-1919—April 7, 1919

COLORED INDUSTRIAL SCHOOL

Grade	17	16	15	14	13	12	10	9	8	7	Total
Advanced C	55										2
Advanced B											0
Advanced A			99								2
Seventh	5	6									3
Sixth			88	5							
			55	9	5						7
Fifth	9	2	99	55	333	222					
		8		66	35	5					22
First		3			33						
Total	4	4	9	7	893	388	996	9111	666	9	21
					11	4	111	111			57

Reasons for Withdrawal

1. Necessity to go to work..... 8
2. Trouble at school..... 4
3. Tired of school..... 9
4. Desire to go to work..... 0
5. Needed at home..... 11
6. Ill health 8
7. Truancy 0
8. Leaving city 6
9. To private or parochial school..... 11

REPETITION

Elementary White Schools—1918-1919

Number of boys and girls on roll.....	3,413
Number of repeaters.....	409
Percentage	11.7
Number of boys on roll.....	1,728
Number of repeaters.....	248
Percentage	14.3
Number of girls on roll.....	1,685
Number of repeaters.....	161
Percentage	9.5

REPETITION

Colored Industrial School—1918-1919

Boys, on roll, 156; repeaters, First Year, 15; Second Year, 1; Third Year, 0; total, 16; percentage, 10.2.

Girls, on roll, 285; repeaters, First Year, 16; Second Year, 0; Third Year, 0; total, 16; percentage, 5.6.

Total, on roll, 441; repeaters, First Year, 31; Second Year, 1; Third Year, 0; total, 32; percentage, 7.2.

PART II

SURVEY OF INDUSTRIES

CHARLES H. WINSLOW

PURPOSE

This portion of the survey concerns itself only with the manufacturing industries, the building and automotive trades.

The aim of this study is to give the Board of Public School Commissioners a knowledge of the industrial and school facts and conditions which must be considered in developing a program of vocational education, and the best expert advice as to what Charleston should do, and how she should do it, in order to meet her industrial, educational, and economic needs.

In accordance with that portion of the resolution adopted by the Board of Public School Commissioners which stated briefly, "desiring to formulate some appropriate and comprehensive plan of industrial education suited to the needs of the City," the problem resolves itself into a study of:

- (a) The industrial and economic needs of the City with reference to which vocational education should be developed.
- (b) The extent to which the schools are now meeting these needs for special types of vocational education.
- (c) The formulation of an appropriate and comprehensive scheme of vocational courses.
- (d) The character and amount of equipment which is required for the scheme of instruction specifically recommended.

It is entirely fair to assume that the real reason why vocational education has not been introduced in a large way in Charleston, is not that the educational authorities were unsympathetic with the object in view,

Desire for Vocational Education but that they were deterred by the knowledge of the magnitude of the task, and the inadequacy of the means at their disposal to complete it, once it was undertaken; that success in an educational way was almost out of the question, until adequate appropriations were secured for the initial steps and at least some assurance that the appropriations would be continuous.

METHODS OF THE SURVEY

The methods of obtaining the information needed to outline an efficient and economical program for vocational education were those of observation of the divers industrial activities of the City; of analysis of statistical data regarding the economic and educational conditions obtaining in the industries; and of conference with those engaged in industrial pursuits, both from the point of view of employer and employed.

The conference method was used largely to obtain the judgment of employers and employees as to the expediency of establishing and maintaining courses of instruction along specific lines. In addition, each

Activities of the Survey industry studied furnished the survey with detailed information through the questionnaire method. This permitted the recording of their willingness to co-operate with schools in the introduction of vocational education. More than 200 such conferences were held. Visits were made to 120 industrial plants. The actual number of

schedules obtained was 170 and the number of workers represented by the plants both studied and visited was 5,000.

The following form of questionnaire was used:

CHARLESTON, S. C., INDUSTRIAL SURVEY

1920.

Name of Establishment.....
 Character of Industry.....
 Name of Specific Trade or Employment.....
 Name and title of person furnishing information.....

CONFIDENTIAL DATA

1. Is the supply of Labor adequate to meet demand?..... (Cause of Deficiency, if any?)	(b) Trade and technical knowledge
2. Is demand for labor increasing or decreasing?.....	7. Conditions of Employment: WAGE-APPRENTICES (a) Beginning wage..... (b) Second-year wage..... (c) Third-year wage..... (d) Fourth-year wage..... JOURNEYMEN (f) Minimum wage..... (g) Maximum wage.....
3. What is the source of supply?.....	8. Hours of Labor: (a) Regular, per day..... (b) Per week..... (c) On Saturday.....
4. What does worker need to properly equip him for trade: (a) General Education..... (b) Trade and Technical Education	9. Seasonal Activity: (a) Busy season
5. What the Industry gives as to conditions of Apprentices: (a) Provision made for systematic instruction of Apprentices.....	10. Entrance Age..... 11. Years required to learn trade
(b) Extent to which trade can be learned in shop.....	12. No. Employed in Occupation: (a) White Journeymen..... Apprentices
(c) Line of Promotion.....	(b) Colored Journeymen..... Apprentices
6. Suggestions from the trade as to what school ought to give: I. Before entering shop.....	Total Journeymen..... Apprentices
II. (a) After entering shop.....	A. If courses are offered in the above occupation in the public schools, would you encourage attendance by those in your employ?
	.....Agent.

On arriving at a final selection of industries and occupations, for which courses of instruction should be offered in the schools, other factors than

Selection of Occupation for Training Purposes the number of workers employed were taken into consideration. It was recognized, for example, that large industrial groups of unskilled labor, and some industries employing largely semi-skilled workers, did not provide a suitable basis for vocational instruction, and therefore an expenditure of any portion of the public money devoted to vocational instruction could not properly be made upon these industries and occupations. Again, for example, a relatively small, though growing industry, such as the printing industry, must be taken into account, because of its staple character.

The survey was accordingly confined almost exclusively to those industries which judged by the numbers engaged in them and by the **Helping the Industries to Grow** probability of further developments, were at the same time of such importance as to warrant proposing them as suitable vocational training fields in the community.

In the main the survey has been directed towards those industries in which it seemed probable that the development of the industries and the advancement of workers in the industry was prevented or made difficult by lack of knowledge or of training on the part of the workers.

In determining the scope and character of instruction for the immediate future, the general principle was recognized that, the occupations providing a suitable basis for vocational instruction, are in the main, those in which some system of apprenticeship training must be maintained as a condition of developing the highest degree of efficiency in the workers.

SCOPE OF THE SURVEY

Outside of the building, metal, ship-yard, electrical automotive and printing trades the findings show a number of large establishments turning out specialized products produced by technical processes (such as the fertilizer industry) which utilize a few highly skilled men, but in addition employ a very considerable number of unskilled or low-grade workers, all of whom are colored.

All the other plants visited but not studied (such as the lumber industries) culminate in extremely small groups of skilled workers in various industrial occupations usually with relatively large numbers of unskilled or common labor, most all of whom are colored.

Several industries were omitted from the survey for various reasons and are therefore eliminated from the findings and report. These represent the bakeries, box and basket making, ice making, mines and mining, tobacco and cigar making and the oil mills.

The building, metal, Navy Yard, electrical, printing, and automotive trades represent a large number of skilled workers. These workers are not unlike workers in the same line of work in other communities.

They lack the breadth of vision of their several occupations. Many have never served an apprenticeship. These have been obliged to chance upon their trades by roaming from one

Why Training is Suggested

Industries Visited but Not Studied

Industries Omitted from the Survey

Industries Surveyed

shop to another, picking up in their travels much valuable information as well as actual practice in their chosen careers. They are efficient workers, only from the point of view of manipulative skill. Much can be accomplished for such workers through the public schools of the City.

Naturally these industries are recruited from the youth of Charleston. When the normal boy arrives at the age of fourteen he begins to feel the

pressure and appeal of community life. His future career
Recruiting as an artisan begins to open before him. The school has
the Trades not responded to this appeal. At just that point when the
boy should become intensely interested in his school work,
he becomes stale and restive, providing he remains in school.

These new interests developing in the boy as he comes into maturity and economic independence, should not be regarded as interests alien to the purpose of education. Economic pressure is or should be, on the contrary, a tremendous educational force, if properly utilized. It is now running to waste very generally. It should be conserved and utilized by providing in the schools such courses as are required to meet the needs of the boys.

WOMEN IN INDUSTRY

Never have we been quite so certain that women are permanently in industry as at the present moment. However, since they have "arrived" the question of their participation in the future is probably the largest unsolved problem confronting the educational authorities today.

Industry is commandeering the young girls of the Nation to its service, and generally speaking is failing to safeguard properly those so engaged, either before entrance into the world's work or after they have become part of the heat of competition.

Employers of young girls have only recently assumed anything like a fair share of responsibility in properly organizing a movement for vocational education. It is true that opinion has been divided as to the value of trade preparation for girls. This has been based upon the supposition that large numbers remain in industry for only a few years. This notion, however, is fast disappearing largely due to the increasing economic pressure caused by the high cost of living which makes wage earning more and more necessary.

Experience during the past ten years with trade education for girls leaves no question whatever concerning the value of vocational education for those who are prepared to benefit by it. It serves to bridge the gap between the ordinary day school instruction and industry, gives the girl a chance to discover what she is capable of doing, prepares her to face difficulties in the work-a-day world, arouses her ambitions to succeed and offers a more definite entrance into industry. It develops the faculties of concentration and application, which are so essential to an industrial career. It raises standards, creates higher ideals of work, gives breadth and vision, and trains in the value of time, attention, courtesy, efficiency and loyalty. Parents and employers generally are anxious to secure the benefits of such training as soon as it is demonstrated that earning power is increased.

It must be admitted (and to their credit) that large numbers of employers in the very recent past have awakened to the value of vocational training for girls and in consequence have been foremost in their advocacy of special training in the public schools.

As a rule, girls do not enter industry in the same serious spirit which distinguishes the entrance of boys. It is regrettable that only a very small proportion of girls see in their work anything but a makeshift. Yet that portion who do regard it worthy of their best initiative develop much more rapidly into efficient workers or embryo executives than do the boys.

The conspicuous instances in commercial and industrial establishments where opportunity to demonstrate capacity obtains the rise to posts of very high responsibility have been remarkable. In fact, nothing in recent social phenomena is more striking than the manifestation of groups of young women in their zeal to lead in the tasks hitherto unheard of in commerce, industry or war.

There are in Charleston and vicinity some twenty industrial establishments employing approximately 700 women whose occupations require varying degrees of skill. These women are working in proper surroundings and with due regard for their complex problems which arise in any large organization including both sexes.

Among the industries which employ women workers are the asbestos, bagging and textile factories. Women are also engaged in millinery and hat making, cigar making, power machine operating, printing and book-binding, drafting and tracing.

Women have entered industry in Charleston to stay. They sought employment in the beginning for economic reasons perhaps, and without much plan or thought about the future, but their growing social independence bids fair to eliminate the disturbing effect which possible marriage might presumably have.

As women approached industry at a critical time with the supreme confidence of her sex, she demonstrated first her manual dexterity and steadiness. She was willing to work for less because at first her work was less important in the labor market than that of the machinist or toolmaker. This very ability evidenced particularly in mechanical operations where speed and precision were at a premium, commanded women to the factory as possible machine operators of all kinds. She proved her ability to handle machine operations within her strength, more rapidly and with less loss than young men. As a class, she did not dissipate, was fairly regular in attendance, and in congenial surroundings worked with a minimum of friction in the plant organization.

Woman's competition at this time—the present—is chiefly with young men. The mature man mechanic, and the number is limited, has still his important place in the factory and always will have. But through their own fault that place is becoming more and more circumscribed. He has always objected to the automatic machine instead of adopting it, and he has opposed female labor. Consequently, the factory in the search for the highest efficiency sees in female operators a real solution. They will ultimately absorb those jobs which do not require great physical strength; they will drive men to revise their entire attitude toward the factory if they would maintain their positions.

What has been stated above is fact—women are now producing results, and in the readjustment which is sure to come soon, female labor will be a recognized factor. Moreover, if the female employee can be trained to the same degree that men have been, their earning power would rapidly increase. It

is an unchangeable fact that the employer is seeking results. If women can produce they will have the opportunity.

The following courses have been proven practicable for evening school purposes for girls and women who wish to fit themselves for power machine operating, drafting and tracing and are recommended for consideration to the Board of Public School Commissioners.

Mechanical Drawing and Tracing. This course should cover free hand drawing and design, the use of triangles, T-square scale, lettering, care of instruments, drawing of simple objects, construction of helix, ellipse, drawing from sketches, simple machine parts, standard bolts, nuts and threads. Development of cylinders, hexagonal and square prisms, development of pipe joints.

Function of the architect, building materials, architectural development of the modern home, heating, ventilating, lighting, plumbing, etc. Making tracings, blue prints, binding the working drawing. Drawing of machines and complex machine parts. Elements of design, geometry, drawing of street intersections, sections and topographical work, etc. Drawing of some form of shop work.

Power Machine Operating. This course should cover the following: 1 Elementary, 2 Intermediate, 3 Advanced, 4 Special machines. Under 1, knowledge and care of machines, control, practice straight stitching on simple garments. Under 2, practice stitching on more difficult garments. Under 3, knowledge of machine and how to control it. Knowledge of processes and the use of attachments. Also work on various garments differing in style, material and trimmings. 4, knowledge of special machines—how machine is run, control, advantages or reasons, speed-tension, how controlled. Length of stitch—adaptation to various materials, influences on appearances and durability. Winding and placing of bobbin, shuttle, needle. Knee press—aid in efficiency. Feed—how to adjust. Place of work. Variation of rhythmic throb of machine an indication of trouble. Management of double seaming.

ADMINISTRATION, SUPERVISION AND INSTRUCTION

The importance of selecting the best possible material for teachers in these classes cannot be over-emphasized. When the course involves instruction in science, the teacher should either have had practical experience in industry or have made a special study of the industries from which students are liable to come.

Teaching
Force

It is recommended that courses be given on three nights a week and that the classes be arranged on the trade basis noted above, also that the maximum number in any class be placed at fifteen.

The survey revealed the presence of men now engaged in supervisory positions with industrial enterprises in the city who have had experience in teaching trade courses in other cities. These men should not be overlooked when the selection of a teaching force is under consideration.

Cordial support for such classes would seem to be assured, on the part of employers and officials of organized labor, judging from interviews held during the survey. All evening courses should be thoroughly advertised by posters in the plants a considerable time before beginning and in places where they will reach the eyes of the workers.

Attention should be called to the fact that vocational classes like those

recommended can only be efficiently maintained when under adequate expert direction.

If the classes recommended by the survey are to be organized, provision should be made for a supervisor experienced in such work.

Supervision One preferably with industrial experience. Such a supervisor should have direction of all industrial work in the evening classes and any part-time or day classes that may be established.

It cannot be too strongly emphasized that vocational instruction in the schools can be made successful and maintained at high standards of efficiency only through the earnest and intimate co-operation of those engaged in practical work in the industries. The Public School Commissioners and the Superintendent of Schools need this co-operation in order that instruction in the schools may make a real connection with the vocational and industrial needs of the employers as well as the employed workers, in order to keep pace with the changing conditions of industry. The most effective method to achieve the result is through an advisory committee.

In conformity with the general custom prevailing in other cities the appointment of an advisory committee of six members is

Advisory Committee recommended, three of whom should be employers and three others actually engaged as employees; the superintendent of schools to be a member ex-officio of the committee.

The school authorities aided by the advice and recommendations of the advisory committee, standardize the entrance requirements, the equipment, the courses of study, the method of instruction and certification.

When important questions of policy relating to work in industrial education are concerned it is highly desirable that the Board of Public School Commissioners obtain the advice of this committee.

The scheme of vocational education in Charleston should comprehend some systematic and continuous treatment of shop conditions with a view to utilizing shop work and equipment to the Industrial Co-ordinator fullest extent possible for the training of apprentices employed in these establishments.

Ultimately, if not at the outset, an expert in shop practice should be appointed to the staff of the Superintendent of Schools. It should be the duty of this expert to obtain for the apprentices who are attending evening courses the greatest amount of educational value out of their wage-earning employments by co-operating with employers in the organization of the labor forces in the shop so as to yield an all-around training for the industry.

At the outset this experiment might take the following trend: The co-ordinator, who is naturally a regular teacher in the school, might devote one-half of his time to teaching in the school and the remainder of his time in observing and co-ordinating with the industries. This method presupposes continuous contact with the school as a teacher and with the industry as a co-ordinator.

This work will, of course, necessarily be conditioned upon the full co-operation of employers with the school authorities, and since one result of such expert service would certainly be an increase in the efficiency of the working force in each establishment it may fairly be assumed that employers would co-operate freely in this line of work.

RECOMMENDATION REGARDING DAY, PART-TIME, AND EVENING INSTRUCTION

Educational Approaches There are two educational approaches to the problem presented by such workers. One is the pre-employment courses for boys up to sixteen years of age in special vocational classes which devote a large amount of time to mechanical work, supplementary drawings, mathematics and the principles of physics.

Day and Part-Time Instruction While at the outset provisions cannot be made for all, the hope may be expressed for those below 16 years of age that either day or part-time classes or, both will eventually be established.

It must be remembered that in regard to this type of vocational education, as well as for evening classes, that State and Federal aid is available for three-fourths the salary of teachers giving instruction in industrial and related subjects.

The main, or second approach for workers in the above groups must be found in evening classes.

Evening Instruction In order to make these courses interesting and therefore of advantage to the students, and aside from the regular class room work, popular evening lectures should be provided at stated periods. Such lectures should be presented in the simplest possible way and with special reference to their application in local industries. Such lectures, if made interesting enough to appeal to the workers could hardly fail to increase their industrial intelligence and in many cases stimulate the interest to further study.

KIND AND CHARACTER OF CLASSES

The following program of classes, indicates the character demanded, and is recommended as the program revealed by the survey. These should cover a period of three years with the exception of textile workers and vulcanizers.

1. DRAFTING

For the Metal Trades—Building Trades and Ship Yard Trades—

(a) For apprentices.....	1 Evening School Classes
(b) For journeymen.....	2 Evening School Classes

2. PATTERN MAKING

For Metal Trades—

(a) For apprentices.....	1 Evening School Classes
(b) For journeymen.....	2 Evening School Classes

3. MACHINE SHOP WORK

For the Metal Trades and Navy Yard Trades—

(a) For apprentices.....	1 Evening School Classes
(b) For journeymen.....	2 Evening School Classes

4. SHEET METAL WORK

For the Building Trades, Metal and Navy Yard Trades—

(a) For apprentices.....	1 Evening School Classes
(b) For journeymen.....	2 Evening School Classes

5. PLUMBING AND STEAMFITTING

For the Building Trades, Metal and Navy Yard Trades—

(a) For apprentices.....	1 Evening School Classes
(b) For journeymen.....	2 Evening School Classes

6. BRICKLAYERS AND MASONs

For the Building Trades—

(a) For apprentices.....1 Evening School Classes
 (b) For journeymen.....2 Evening School Classes

7. CARPENTRY, CABINET MAKING AND JOINERY

For the Building, Metal and Navy Yard Trades—

(a) For apprentices.....1 Evening School Classes
 (b) For journeymen.....2 Evening School Classes

8. ELECTRICAL WORK

For the Building, Metal and Navy Yard Trades—

(a) For apprentices.....1 Evening School Classes
 (b) For journeymen.....2 Evening School Classes

9. AUTO REPAIR—GAS ENGINES

For the Automotive and Navy Yard Trades—

(a) For apprentices.....1 Evening School Classes
 (b) For journeymen.....2 Evening School Classes

10. ACETYLENE WELDING

For the Metal and Navy Yard Trades—

(a) For apprentices.....1 Evening School Classes
 (b) For journeymen.....2 Evening School Classes

11. VULCANIZING

For the Automotive Trades—

(a) For apprentices.....1 Evening School Classes
 (b) For journeymen.....2 Evening School Classes

12. BOILERMAKERS

For the Metal and Navy Yard Trades—

(a) For apprentices.....1 Evening School Classes
 (b) For journeymen.....2 Evening School Classes

13. MOLDERS

For the Metal and Navy Yard Trades—

(a) For apprentices.....1 Evening School Classes
 (b) For journeymen.....2 Evening School Classes

14. SHIP JOINERS

For the Navy Yard Trades—

(a) For apprentices.....1 Evening School Classes
 (b) For journeymen.....2 Evening School Classes

15. PRINTING

For the Printing Trades—

(a) For apprentices.....1 Evening School Classes
 (b) For journeymen.....2 Evening School Classes

16. TEXTILE INDUSTRY

(a) Loom fixers.....1 part-time classes
 (b) For weavers2 part time classes
 (c) For general mill workers.....3 Evening Classes

ORGANIZATION AND CONDUCT OF EVENING SCHOOL WORK

A community which undertakes the organization of evening classes for industrial workers must realize that it has a very great responsibility in preparing for this service. The work of organization may be compared to the preparation of a manufacturing plant, and the conduct of the school, aside from the work of the classroom teachers, may be compared to the service in a manufacturing concern which is conducted and paid for from funds charged to the overhead account.

Careful Preparation for the Work Unless much careful planning precedes the opening of the school year, it is not likely that the community can render full service to trade workers in its evening schools. The Public School Commissioners should have under careful consideration such questions as the following:

1. What are the industries in the community for which evening trade extension work can be given?
2. Which of these shall be chosen for evening school work?
3. What conferences of employers and employees can be held in order to determine common needs?
4. What steps can be taken to secure adequate funds for the work?
5. How can teachers with satisfactory qualifications be recruited?
6. Where can classes be held most advantageously?
7. What utilization of private equipment is possible?

These are questions which can not be answered the week before school begins. They need careful and constant consideration. It is to be remembered that evening schools if they are to be effective, can not be static, they must be dynamic; they can not be fixed—they must be flexible; they can not be constant—they must meet a varying need.

PART-TIME INSTRUCTION

The part-time school is any school conducted for a limited number of hours during the regular working day. Such a school is open to minors and adults who have entered upon employment, and its several aims are to continue neglected or interrupted elementary education and to prepare for entrance into better occupations or to supplement and extend knowledge and skill in present occupations.

The name "part-time school" is given to any school to which the definition just given applies. When the school aims to complete general education, it is designated a part-time continuation school; when it aims to increase skill and intelligence in a vocation other than that in which the pupils are employed, it is a part-time trade preparatory school; and when it provides training that is strictly supplementary and related to the employment of its pupils, it is a part-time trade extension school.

Within recent years, some cities have come to feel that their educational responsibilities toward their children were not terminated by the issue of a work permit and that no matter whether at work or in school, the minor was the educational ward of the city until he was properly fitted for life or reached an age of discretion. This awakened educational consciousness on the part of the City is a hopeful sign, especially as it has been fostered by labor itself, which has more than once assumed the attitude "that the children

leaving school may not be deprived of all their opportunities to improve their education and secure more knowledge."

Employer, employee, and educator alike have come to realize that the many pupils who leave the public schools at an early age never learn the relationship between the theory taught in school and the practices of the shop. A few hours' school instruction each week in related technical work, personal hygiene, shop and home sanitation, civics (in relation to daily problems), builds a tangible superstructure upon previous schooling which becomes a bond between the school and shop.

Between the ages of 14 and 18 a boy is just beginning to find himself as a unit in society and business, and he is then in need of continued training which is both practical and interesting and which will awaken in him a desire for civic intelligence and vocational efficiency.

For a large majority of these pupils, and for practically all of the others who make up the million leaving school each year, a part-time plan of education is needed. There is very well-defined sentiment in America that the all-day school is based almost entirely upon a definitely outlined plan of work for groups rather than for individuals, and that the part-time and the evening schools are more likely to be considerate of human needs and make such changes and adjustments as are necessary to supply immediate instruction to those young persons who are at work, or who contemplate entrance into wage-earning employment.

There are two kinds of equipment to be considered: (1)

Equipping the Work the shop and related subjects equipment, and (2) the general equipment. The former includes the essential tools by which trade knowledge or skill is acquired, and the second such equipment as seats, blackboards, and books.

An evening industrial school can not do business satisfactorily without proper trade equipment. Too often such schools have been obliged to get along with the equipment of the regular day school, when it is frequently poorly adapted to trade work. It is true that in some subjects effective instruction can be given to the trade worker without extensive equipment; but no instruction can be given without the proper kind of equipment. When shop work is to be given in the evening school the equipment should be of the same standard, both as to quality and that used in the best plants engaged in commercial work of the kind for which instruction is given. It should be sufficient, both in variety and quality, to enable the school to give instruction, in all the trade processes necessary to meet the needs of workers desirous of improving themselves in their chosen vocation. The usual manual-training equipment is inadequate for evening extension.

Not infrequently industrial plants and business houses are better equipped for practical teaching than the schools themselves. Evening classes under public supervision and control held in these plants have the added advantage of the use of machines for illustration and of the use for demonstration of materials and the product itself at various stages of its development.

While a community should not attempt to offer evening industrial work for any trade unless it has an adequate equipment, nevertheless the community should not refuse to undertake such work because at first sight the equipment seems difficult to obtain. A careful study of the equipment available,

both in school and in private establishments, often reveals unexpected sources of supply, and will determine the courses which can be given to advantage.

In related subjects less equipment is necessary than in shop work. In the beginning of evening industrial work in any community, it may be necessary to have related subjects only in the evening school. It is possible for any community, where there is any considerable amount of industrial work, to maintain an evening class in drawing or shop mathematics which will give instruction supplemental to the daily employment of a sufficiently large group of workers to warrant the school authorities in forming a class. The cost of necessary equipment would be almost negligible.

If the occupation for which evening school instruction is to be given requires mathematics, drawing, or science, for a workman to be known as a master of his trade, it is possible and desirable to give Related courses in these subjects. It is not to be understood from Subject Work this statement, however, that any of these subjects as ordinarily formulated in secondary schools can be given in an evening industrial school. It would be hard to find a trade or industrial pursuit, for example, which would require a knowledge of algebra through quadratics, such as is required in college entrance examinations or a knowledge of demonstrational geometry, or of trigonometry, or of calculus. There are, however, trades which use facts taken from these branches of mathematics. Problems and demonstrations selected according to their usefulness in specific trades may be properly considered as constituting the mathematics of those trades, and may be taught in evening classes. Similarly there are facts in science which may be organized in courses of trade science. Such courses, organized by the instructor, must be adapted to the needs of the group being taught.

COMBINATION COURSES FOR PERSONS FROM CLOSELY RELATED TRADES

Sometimes on account of the size of the community where evening industrial work is to be given it will be impossible to secure a large enough enrollment to warrant the establishment of an evening school class in a particular trade. It may be possible to arrange a course which will give instruction supplementary to the daily employment to persons from closely allied occupations, but the fundamental consideration must be kept in mind that all instruction in the evening schools under discussion must be of demonstrable value in the daily occupation to pupils taking the work, *i. e.*, the work must be truly supplemental.

**Combination Courses for
Carpenters,
Bricklayers,
Plumbers,
Sheet-Metal
Electrical
Workers and
Steamfitters**

An example of this kind of a course may be taken from the group of building trades. It is entirely practical to arrange reading architectural drawings for carpenters, masons, bricklayers, plumbers, and electricians which would provide instruction of value to a class composed of men from all of these trades. It would, of course, be understood that the aim of the course would not be to make draftsmen but to enable the carpenters, masons, bricklayers, plumbers, and electricians to learn to read and to understand the drawings which are used by them in their daily work.

Another illustration might be taken from the drafting trades themselves.

In every large or even moderately large industrial community there are a large number of persons engaged in drafting as an occupation. There are architectural draftsmen, machine-shop designers, draftsmen, for cabinet work, for electrical and for other kinds of work. Here the finer technique of drafting can be made the basis of work, and the aim can be that of improving the men in their daily occupation of drafting in any of its various branches.

EXAMPLES OF COMBINATION COURSES

Combination Courses for Building Trades Men	Carpenters Bricklayers Plumbers Steamfitters Sheet metal workers Electrical workers
Combination Courses for Draftsmen	Architectural draftsmen Machine draftsmen Cabinet draftsmen Electrical draftsmen
Combination Courses for Auto Mechanics	Gas engine repairers Transmission repairers Battery repairers Ignition repairers Carburetor repairers Vulcanizers
Combination Courses for Shipyard and Metal Trade Workers	Machinist Blacksmith Boilermaker Pipefitter Carpenter Joiner Plumber Shipwright Loftsmen Anglesmith Electrician Patternmaker Coppersmith Oxy-Acetylene Molders
Combination Courses for Printers	Hand compositors Linotype operators and machinists Monotype operators and machinists Stonemen Proofreaders and copyholders Copywriters Pressmen Bindery workers

Combination Courses for Textile Workers	<table border="0"> <tr> <td style="border-left: 1px solid black; padding-left: 10px;">Loom fixing</td></tr> <tr> <td>Weaving</td></tr> <tr> <td>General textile work</td></tr> </table>	Loom fixing	Weaving	General textile work
Loom fixing				
Weaving				
General textile work				

There are two kinds of vocational work possible in an evening industrial school: namely, shopwork and related subject work. The former requires an equipment adequate in amount and modern in character, and is largely concerned with the actual handling of machines and the manipulation of materials. The latter is concerned with a consideration of the related science, drawing and mathematics. The first is concerned with the "how," and the second with the "why." The second can be given with little equipment and in an ordinary classroom.

The evening school shopwork can be conducted on the exercise basis to a much greater extent with better results than is advisable in a day school, since the pupils in attendance are familiar with the productive side, and desire to perfect themselves in particular operations, or to learn new ones, which will lead to opportunities for promotions, or to a greater round of experience in the chosen trade.

RECOMMENDATIONS AS TO COURSES

No attempt is made herein to formulate a complete or exhaustive scheme of vocational courses, but experience has indicated that the following courses are serviceable and practicable for this purpose:

Mechanical Drawing, covering the making of working drawings, projection, intersections and developments, freehand sketching for machine parts, detail and assembly drawings for the first two years, and mechanism and simple structural drawing for the third year.

Strength of Materials. The plan of instruction should be very simple and deal mainly with the stresses and strains produced under tension, compression and shearing. Columns and beams must necessarily be dealt with from the empirical standpoint without the theoretical mathematical analysis.

Machinists *Mechanical Drawing*, much the same as for draftsmen concentrated in the second year upon drawings illustrating machine construction.

Shop Mathematics, fractions and decimal parts, metric system calculations relating to mensuration, pulleys, belting, gearing, screw threads and taper turning.

Machine Shop Practice. If a school machine shop is available with an equipment of typical up-to-date machine tools, a course in practical shop work can be given with much profit. Such a course can be differentiated according to the needs of the individuals, some men wanting special work on particular tools such as the lathes, planer, shaper or milling machine.

Sheet Metal Workers *Mechanical Drawing*. Same as for draftsmen for first year running into intersections and developments and pattern work in the second year.

Pattern Makers *Mechanical Drawing*. Same as for draftsmen first two years.

Shop Mathematics. Same as for machinists.

Elements of Architectural Drawing. First Year. Course to

Carpenters include working drawings dealing with full size and scale details of frame, brick and stone work construction; elevations and section of windows, doors, etc., from blackboard instruction.

Plan Reading and Cost Estimating. Course to cover the methods of estimating of materials with reference to the provisions of the Building Code of the City.

Bricklayers and Masons Architectural drawing as for carpenters.

Freehand Sketching and Blue Print Reading, dealing with pipe lines and fixtures giving figures, dimensions and as related to installations and calculations needed for the materials. Accompanying this course

Plumbers should be instruction in the physical principles underlying the use of fixtures, traps and hot water boilers, illustrated by the rules of the Board of Health bearing upon the same.

Electrical Workers *Mechanical Drawing for Wiremen.* Same as for carpenters. *Mechanical Drawing for Electricians.* Drawing of electrical equipment and standards.

Motor Mechanical *Mechanical Drawing.* (Same as for first two years of machinists.)

Practice. The welding of all metals including not only wrought iron and steel, but cast iron, malleable iron, aluminum, copper, brass and bronze.

Ship Joiners *Mechanical Drawing.* Same as for machinists for first year. Second and third year, ship drafting.

Practice. Reading of blue prints; use of bevel and bevel board; general joinery, emphasizing:

- (a) Bevel instead of square work.
- (b) Mortise and tenon instead of grooved work.

Pipe Fitters *Freehand Sketching.* Same as for plumbers. *Blue Print Reading.* Same as for plumbers.

Course in Elementary and Advanced Electricity. The practical units of current, voltage and resistance; Ohm's Law; measurement of current voltage by means of ammeter and voltmeter, and by means of

Electricians Wheatstone's Bridge; the equivalent resistance of conductors in series and parallel circuits, and how the current and voltage divides in such circuits; the meaning and use of circular mil and mil-foot.

Computation of resistance of wires from their dimensions and specific resistances; the practical units of power; measurements of power by means of ammeter and voltmeter and watt meter; the use of watt-hour meter; the calculation of total power in a circuit, the power lost in line and the relation of power loss to diameter of conductor.

The current carrying capacities of conductors of different sizes and conditions, the theory and operation of the three wire system; the operation of switching apparatus, including fuses, circuit breakers, and remote control switching; methods of using wire tables and hand hooks; the Electrical Code requirements.

Boilermakers (Same as for sheet metal workers.)

Molders *Drawing.* Same as for machinists for First and Second year.

For all Workers	<i>Courses in Physics</i> , dealing with mechanics, heat and hydraulics.
	<i>Courses in Algebra and Geometry</i> are advised if sufficient numbers to justify classes can be enrolled.
Practice.	Repair of blow-outs; rim cuts; blisters. Preparation of the tire for repairing, relining, retreading, and vulcanizing.
Vulcanizers	Patching, splicing, and vulcanizing of tubes and replacing valves in tube stem.
Printing	<i>English, History of Printing</i> , straight composition, punctuation, capitalization, division of words, abbreviations, construction of sentence, paragraphing, planning and layout of composition, styles of typography, setting book word tabular matter, ad. and job work, design and layouts, color harmony and imposition.
Textile Workers	<i>Loomfixing and Weaving</i> . Construction of a loom, relation of individual parts, manipulation of the harness, various let-off motions, selvage motions, box motions, dobbies, automatic looms, and narrow fabric looms.
	Cotton mill arithmetic, driving and driven machinery, carding and card room calculations, spinning and spinning room calculations, weaving and weaving room calculations, cotton mill records and reports.

SURVEY FINDINGS

What follows is an attempt to summarize briefly the findings of the industrial survey. Each summary includes the industrial, educational and economic conditions prevailing, as reported on the schedules secured.

These data are of a confidential nature and are thus grouped by the industries, rather than by separate units in a given industry.

Facts are given concerning the size and importance of the industry; supply and demand of skilled workers; source of supply; adequacy of shop instruction; apprenticeships; line of promotion; suggestions of subjects to be taught for the trades by the schools; wages and hours of employees; willingness of employers to co-operate with the schools.

Data regarding conferences, plant visitations, schedules obtained and number of workers represented by the study are shown on pages 72-73.

METAL, ELECTRICAL AND NAVY YARD TRADES

The inquiry as regards the above trades embraces twelve establishments, employing at the date of inquiry 1,113 workers, exclusive of office help, and common labor. Among the workers employed are 138 apprentices, exclusive of other young workers, and beginners.

The metal trades industry with its apprentices and young workers will no doubt prove the most potent factor in the establishment of vocational education in both day and evening schools.

PRODUCTS OF THE METAL TRADES ESTABLISHMENTS

The products or specialties of the metal trades establishments cover a great variety of enterprises, and are as follows: Building and repair of iron and steel ships; general machine repair work; electric machinery; iron and structural steel work; repairing locomotives, passenger and freight cars. This industry ranks first in capital invested (\$1,517,356) and wages paid (\$3,143,837) for Charleston.

DEMANDS OF NEAR FUTURE

Most all of the firms interviewed seem to be of the opinion that in the near future a general expansion of business may be expected in the building of iron and steel ships, machine tools, and instruments of precision; in the building and repair of locomotives and steel cars, and general machine repairs. It seems probable from this common opinion that the demand for competent mechanics in the lines specified will be for some years to come an ever increasing one. Even under present conditions, the consensus of opinion among employers is that the supply of skilled labor in these branches of the industry is inadequate.

PROMOTING THE WORKERS

In the larger establishments which employ the majority of the men in the metal trades the regular line of promotion is from apprentice to journeyman, to working leader, assistant foreman, foreman and inspector. In smaller establishments no well defined line of promotion is recognized, but in these establishments, the work is generally of a miscellaneous character and promotion takes the form of advancing men to more skilled work in proportion as they become proficient.

APPRENTICESHIP

In the majority of the metal trades establishments no regular indenture system of apprenticeship exists. Of the twelve firms returning schedules only two report indentures by written agreements. Employers are inclined to the opinion that if a regular indentured apprenticeship was maintained throughout the industry, boys would have a very different attitude toward their work.

According to the returns on the survey establishment schedules in answer to the inquiry as to the "extent to which trades can be learned in the shop" the majority opinion is, that all of the practical part of the following trades can be learned thoroughly in the shop: Molding, pattern-making, woodworking, blacksmithing, electric-motor construction, carpentry, boiler making, tinning, sheet-metal working, pipe fitting, steam-fitting, sheet-iron working, copper-smithing, ship-joining, boat-building, rigging, riveting, calking, ship-smithing, galvanizing and electrical construction. As regards the above occupations it is generally true that a fair opportunity is given for the untrained beginner to acquire some practical experience. However, no systematic provision is made for instructing men in the trades specified beyond the practical needs of the shop, and in the case of some establishments apprentices are required to take industrial or other school courses at their own expense. Aside from such requirements imposed upon apprentices, a beginner has to get his training in the daily performance of his duties.

KIND OF SCHOOLING REQUIRED

Employers are of the opinion that their workers are lacking in general education, especially in ability to understand, read and write the language of the shop and to interpret correctly written and oral instruction given, and this fact more than any other, except deficiency in trade training, prevents workers from acquiring a high degree of efficiency. Instruction beyond the seventh grade is favored by almost all of the employers for almost all of the occupations to be found in their establishments. Shop mathematics, mechanical drawing; metallurgy, fundamentals of electricity, blue print reading, and chemistry are the subjects most generally indicated as required in the majority of occupations.

With reference to the kind of schools to be established—night or part-time day schools—employers seem to be divided in their opinions. Where part-time day instruction has been given—as in the case of the apprentices in the Navy Yard—the appeal for this kind of instruction is very strong. All employers interviewed, however, expressed a willingness to co-operate in a part-time scheme if some feasible plan is presented.

Without any qualifications all employers express themselves most emphatically in favor of the public school authorities establishing at an early date evening school instruction for both journeymen and apprentices in the metal trades. Moreover they express a willingness to assist the public school authorities in making the enterprise a success.

AUTOMOTIVE INDUSTRY

There are approximately thirty-five service stations and garages in Charleston, employing in the neighborhood of 200 men and thirty-seven apprentices engaged in the repair and upkeep of cars. It is a fast growing industry and

shows evidence of adopting modern ideas more readily because it has no inherited methods or restrictions.

The industry is of peculiar interest to the vocational school movement, because it is new and growing, and is carried on largely by men who, since they have been trained only in machine operation, need the technical training which the schools can give to enable them to qualify for full efficiency in the positions which they hold, but in which they have acquired in the main only manipulative skill.

The employed men are supposed to be all-around mechanics, able to work on all parts of any car. The fact is, however, that few of the men know all the parts of any car, and most garage mechanics are only semi-skilled. Due to the growth of the automotive industry the demand for skilled mechanics in this line is so much greater than the supply that practically any person with a little automotive knowledge is employed by the repair and service stations.

Some of the best service stations have their work sub-divided, and men with wide experience are put in charge of the repairs on the different parts.

Other than the highly skilled men in the industry have been largely recruited from the ranks of unskilled labor and have been trained by foremen of the several departments to which they have been assigned. However, most of the men employed in the industry are young, and are usually interested in obtaining the technical knowledge, as well as the manipulative skill which will enable them to increase their earning capacity.

Among the principal occupations for which training may be offered to advantage in the schools are, general machinists, chassis-repairmen, body-repairmen, engine repairmen, carburetor specialists, ignition specialists, welders, vulcanizers.

Since no other way than by a road test has been found satisfactory in the final adjustments of working parts the tester's services are still in demand. This job is dirty and nerve-racking, but still one of great importance as the tester must be alert, observing, and able to make adjustments in any or all parts of the motor, ignition and lighting systems, transmission, differential, brakes, pumps, steering gear, throttles, and clutch.

The demand for skilled heat treaters exceeds the available number. Many experienced blacksmiths are improving the opportunity to master the art of hardening steel by the measurement process.

Although a school system probably could not maintain and operate a complete heat-treating equipment, the technical side of the processes could be taught more quickly in the school than in the shop. The principles and use of testing instruments, pyrometers, and thermometers, the metallurgy of steel, the character and use of materials for core-hardening and tempering, and the properties of the various hardening baths can be taught best in school.

The service and repair stations offer great opportunities for boys and young men of mechanical skill or training on account of the great variety of work done on all classes and types of automobiles.

The schools are in a favorable position to teach car repair work, for the knowledge and training can be obtained on old cars, as well as on the later models. The old cars can be borrowed or bought outright for a small sum. They can be repeatedly torn down and rebuilt without loss or damage, and custom work can be given the boys after they have a little experience.

EMPLOYERS WILL CO-OPERATE WITH THE SCHOOLS

All of the employers interviewed state that they are ready to co-operate in any scheme of education for the good of their men now or in the future. Moreover they have placed themselves on record through a resolution adopted by the Charleston Automotive Association favoring the introduction of vocational education in the schools.

BUILDING TRADES

Altogether twenty-seven building trades establishments, employing at the date of the inquiry 526 workers, were covered by the survey.

The establishments from which schedules were secured represent those trades found generally in cities having approximately the same population as Charleston, the special lines being painting, construction of buildings, plumbing, heating and steam-fitting, plastering, bricklaying, sheet-metal and tinning.

SUPPLY OF COMPETENT JOURNEYMEN

Almost all of the employers state that difficulties are experienced in obtaining competent journeymen. Although they differ as to the "why," they agree that the supply is traced chiefly to a lack of any system of regular indenture as regards apprentices. It is of interest to note that except for the twenty-seven apprentices recorded by the plumbing and sheet-metal trades there are none in the other branches of the building trades.

CONDITIONS OF APPRENTICESHIP

Generally, employers state, that some instruction is given to beginners by foremen, but the returns indicate that there is, in general, in the building trades no provision for systematic training.

ELEMENTARY TRAINING

It is the unanimous opinion of employers that the efficiency of their employees is impaired by the lack of elementary education. They also assert that school training beyond the seventh grade would be of great value to the workers.

In addition to a complete elementary school training, subjects strictly vocational in character are specified as particularly advantageous; such as, for example, drawing, shop mathematics, estimating and reading of blue prints for workers engaged in construction work.

EMPLOYERS WILL CO-OPERATE

Practically all of the employers favor evening vocational schools, very few expressing preference for part-time day schools. As regards each separate occupation the subjects specified by employers to be taught in evening school classes are included in the outlines of courses given in the recommendations.

Data concerning hours and wages in the building trades are found on page 47.

PRINTING TRADES

The printing trades of Charleston form one of the most important functions in the industrial life of the City. Through the medium of the newspapers and other publications the social, financial and industrial life of the City is conveyed to the most humble cottage as well as to the commercial and industrial centers of interest.

According to the United States census, the capital invested in the printing trades was \$472,163 in 1909. The increase subsequent to 1909 as reported by the Commissioner of Commerce and Industries reached the sum of \$551,500.

Figures obtained from the report of the Department of Labor for the State, show the number of persons employed for the year 1919 as being 400, and the amount paid in wages as \$304,416. This was exclusive of salaried officers.

APPRENTICESHIP

Notwithstanding the fact that more than 20 per cent of all those engaged in the printing industry are under sixteen years of age, only twenty-two apprentices are recorded in the returns of the survey.

The lack of an organized system of apprenticeship is to some extent at least responsible for the very general complaint of employers that they have difficulty in getting beginners who have a good elementary or grammar-school education. In other words, boys are not attracted to the printing trade who have reached the high school age.

Because of the lack of a definite apprenticeship, coupled with the fact that there are some eighty-three young persons under sixteen years of age in the printing industry, would seem to warrant an immediate consideration of the introduction of a course in printing in the day school work.

EMPLOYERS WILL CO-OPERATE IN ESTABLISHMENT OF COURSES

All of the firms interviewed, favor a night school for apprentices and practically all favor day school courses for the youth of the City. In specifying subjects which should be covered in evening-school courses for apprentices, English easily heads the list, followed by arithmetic, reading, spelling, grammar, and punctuation. Other subjects specified are design, drawing, history of printing, chemistry, color harmony, physics and color mixing. The employers feel that the new features and ideas that are constantly being brought forward in the trade should be covered in evening lectures, demonstrations and courses.

Employers very generally stress the idea of a vocational course in printing in the intermediate and high school in order to give adequate preparation for entrance to the printing trades.

TEXTILE INDUSTRY

More capital is invested in and more people employed in this and related industries than in any other in the City; and the value of the annual product is second only to that of the fertilizer industry.

Of the five establishments using textile machinery, no two are alike in equipment, in raw material used, in manipulative processes, or in products turned out. No wool is worked up, but several machines and processes used in handling this material are seen in operation here.

As a maritime city it calls upon the world for most of the raw materials used in this industry— asbestos from Canada and South Africa; jute from India; kapok from Java; raw and waste cotton from domestic sources. Further, the industry is unique from a labor standpoint, as about 1,000 of the 1,600 wage-earning employees are colored.

From the above it can be readily inferred that, aside from instruction in

home economics, very few courses in industrial subjects can be suggested that will meet the needs of a sufficient number of employees to warrant the carrying on of classes in textile subjects in the public schools of the City.

Part-time and evening classes can be carried on to advantage at the mills, preferably within the mills themselves, as corporation schools.

Employees of the industry would profit by attendance upon the classes in machine shop work, practical electricity and industrial mathematics.

At North Charleston classes in home economics would be of the most benefit. Classes in "cottonmill" arithmetic and loom fixing would most likely be of most benefit to the employees of the Royal Mills.

MINIMUM SCALE OF WAGES IN BUILDING TRADES, ON AN
8-HOUR BASIS, IN 28 CITIES, AND IN
CHARLESTON, S. C.

NAMES OF CITIES	Bricklayers	Carpenters	Electricians	Sheet-Metal Workers	Painters	Plasterers	Plumbers	Steam Fitters
Rockford, Ill.	\$0.85	\$0.70	\$0.75	\$0.65	\$0.60	\$0.75	\$0.87½	\$0.87½
Rock Island, Ill.	.82½	.75	.75	.75	.75	.87½	.87½	.87½
Rome, N. Y.	.75	.60		.60	.60			
Salt Lake City, Utah	1.00	.81½	.87½	.82½	.82½	1.00	1.00	1.00
San Antonio, Texas	1.00	.75	.75	.75	.75	1.00	.93¾	.93¾
San Francisco, Cal.	1.12½	.87½	.87½	1.00	.87½	1.12½	1.00	1.00
Sapulpa, Okla.	1.00	.85	.87½	.75	.75		1.00	1.00
Schenectady, N. Y.	.90	.70	.62½	.65	.75	.90	.75	.75
Sheboygan, Wis.	.65	.55	.55	.52½	.55	.65	.62½	.62½
Sioux City, Iowa	.87½	.75	.75	.70	.75	.87½	.87½	.87½
Spokane, Wash.	1.00	.75	.75	.78½	.87½	1.00	.87½	.87½
St. Joseph, Mo.	1.00	.75	.75		.75	1.00	.87½	.87½
St. Paul, Minn.	.87½	.60	.68¾	.70	.62½	.90	.75	.75
St. Petersburg, Fla.	.75	.55	.62½		.62½	.75	.87½	
Syracuse, N. Y.	.87½	.62½	.75	.65	.65	.75	.70	.70
Taunton, Mass.	.75	.60	.60		.60	.75	.65	
Toledo, Ohio	.82½	.90	.75	.80	.62½	.87½	.75	
Topeka, Kansas	.87½	.62½	.70	.55	.50	.87½	.87½	.75
Trenton, N. J.	.80	.75	.82½	.75	.75	.80	.87½	.87½
Tucson, Ariz.	1.00	.80	.87½		.80	.87½	.87½	
Walla Walla, Wash.	1.00	.75	.75	.87½	.75	1.00	.87½	
Washington, D. C.	.87½	.75	1.00	.75	.75	.87½	.87½	.75
Watertown, N. Y.		.62½			.60	.80	.70	
West Palm Beach, Fla.	.87½	.75	.75		.75	.87½	.87½	
Wichita, Kansas	1.00	.75	.87½		.85		1.00	
Winona, Minn.	.60	.60	.45	.50	.50	.70	.56¼	.56¼
Worcester, Mass.	.75	.65	.60	.60	.62½	.75	.75	.75
Youngstown, Ohio	.90	.75	.82½	.75	.68¾	.87½	.90	.90
CHARLESTON, S. C.	1.00	.87½	.87½	1.00	.65	1.00	1.00	1.00

WAGE SCALE FOR EMPLOYEES IN PACIFIC COAST SHIP
YARDS AND IN CHARLESTON, S. C. ON THE
BASIS OF AN EIGHT-HOUR DAY

OCCUPATIONS	RATE per hour in Pacific Coast Yards.	RATE per hour in Charleston, S. C.
Acetylene welders	\$0.80	\$0.80
Anglesmiths .....	.96	.96
Blacksmiths .....	.80	.80
Boilermakers .....	.80	.80
Carpenters (ship) .....	.86	.86
Chippers and calkers .....	.80	.80
Coppersmiths .....	.86	.86
Drillers, pneumatic .....	.68	.68
Electric welders .....	.82	.80
Electrical workers .....	.80	.80
Engineers, locomotive .....	.72	.80
Forgers	1.48	1.48
Joiners (ship) .....	.86	.80
Loftsmen .....	.90	.90
Machinists .....	.80	.80
Moulders .....	.80	.80
Painters .....	.74	.74
Patternmakers .....	.94	.86
Pipe Fitters .....	.80	.80
Plumbers .....	.80	.80
Punch and shear men .....	.68	.64
Riggers .....	.74	.74
Riveters .....	.80	.80
Sheet-metal workers .....	.86	.80
Ship fitters .....	.80	.80
Boat builders .....	.86	.80
Calkers .....	.94	.80
Mill men .....	.86	.80
Ship carpenters (shipwright) .....	.86	.80

EQUIPMENT

In the preparation of data, regarding equipment, consideration has been given to the industrial, economic and educational needs of the City with reference to the development of all types of vocational education. If, however, immediate progress is to be looked for, from the point of view of its industries and education then a generous amount of modern equipment for the initial steps must be provided.

Pre-supposing that eventually or as rapidly as economic conditions permit. Charleston will introduce, step by step, such courses of vocational education as best suits these needs, the following units of shop equipment are recommended: Drafting room, mathematic laboratory, machine shop, sheet metal, plumbing and steam-fitting, woodworking, electrical construction and repair, auto-repair and gas engine, oxy-acetylene, vulcanizing and printing shops.

DRAFTING

EQUIPMENT AND MATERIAL FOR A CLASS OF TWENTY STUDENTS

- 20 Drafting tables—to include rack for drawing boards and drawer for equipment and also small drawers for each individual student.
- 20 Drawing boards—20 in. x 26 in.
- 20 T-squares—24 in.
- 20 45-degree triangle—7 in. celluloid.
- 20 30-degree, 60-degree triangle—9 in.
- 20 Scale—12 in. architects'.
- 20 Sets of instruments. Each set to contain the following:
 - Large compass, with pencil and pen attachments, lengthening bars.
 - Large dividers, hair spring.
 - Bow pen.
 - Bow dividers.
 - Bow pencils.
 - Ruling pen.
- 20 Drawing pencils (4H).
- 20 Pencil erasers.
- 120 Thumb tacks.
- 240 Sheets drawing paper (18 in. x 24 in.), white.
- 1 Blue print machine.
- 1 Blue print washing sink, to take 24 in. x 36 in.
- 1 Cabinet for blue prints and drawings.
- 1 Set ship curves.
- 1 Set 24 irregular curves, assorted.
- 1 Beam compass.
- 1 Planometer.
- 1 Protractor.
- 1 Set splins and nets.
- 1 30-in. steel straight edge.

MATHEMATICS LABORATORY

EQUIPMENT

- 1 Steel square.
- 1 Specific gravity balance, Baume hydrometers.
- 1 Set metric weights, 0.001-50 grams.

- 1 Set English weights, 1 oz.-10 lbs.
- Thermometers—Fahrenheit and Centigrade.
- Skeleton models—d. c. ammeter, d. c. voltmeter, a. c. ammeter, a. c. voltmeter.
- 1 D'Arsonval galvanometer.
- Micrometer calipers.
- Vernier calipers.
- 6 Slide rules—Mannheim, 10 in.
- Dissectable models for lateral area and volume work in solid geometry; cylinder, cone, pyramid, prism, frustums of above, sphere.
- 1 Inclined plane model.
- Pulleys—single and trains.
- Spring balances, 1-50 g.
- 1 Transit.
- 2 New York rods.
- 1 Plumb.
- 2 50-foot tapes (metal).
- 1 Large table for demonstration by instructor, 5 ft. long.
- 1 Comptometer.

SHEET METAL

A room fitted up for a sheet-metal shop needs ample floor space. Projects made of sheet metal often require a large area in which to assemble the parts. As pattern drafting is an essential part of the work in the sheet metal shop, large tables on which to develop and lay out patterns should be provided as a part of the equipment. Good light will also be necessary for this work.

For a class of 10 to 15 pupils, the equipment should include:

5 Double drafting tables, tops 42 x 54 inches.

3 Work tables, tops 48 x 96 inches.

1 Beading machine.

1 Burrung machine.

1 Bench plate.

1 Brake, 3 feet.

1 Brake, 8 feet.

1 Crimping machine.

1 Beak horn.

1 Blow horn.

1 Folder machine.

2 Gas furnaces.

1 Forming machine.

1 Each hollow, round, straight mandrel.

1 Square shears, 36 inches.

1 Circle shears, 32 inches.

1 Double seamer.

1 Turning machine.

1 Wiring machine.

1 Bench punch and shear.

10 to 15 sets hand tools, and miscellaneous small tools.

Each individual set of hand tools to contain the following:

1 Pair No. 8 left-hand snips.

- 1 Pair No. 8 circular snips.
- 1 Riveting hammer, 1½-inch face.
- 1 Set solid punches.
- 1 Roof scraper.
- 1 No. 6 rivet set.
- 1 Chisel, ¾ x inches.
- 1 chisel, ¾ x 10 inches.
- 1 Pair flat pliers, 7-inch.
- 1 Flat bastard file, 10-inch.

For each two men.

- 1 Table, 2 x 7 feet, 32 inches high.
- 1 Fire pot (gas, gasoline, or charcoal).
- 1 Pair soldering irons.

For each four men:

- 1 Gasoline blowtorch.

For each six men:

- 1 Bench vise.

WOODWORKING

*Equipment now on hand.

The following list of tools and materials are required for a class of fifteen students:

1. INDIVIDUAL EQUIPMENT

- 15 Benches, 6 4-drawers.
- 5 Steel squares, 16 in. tongue with board measure.
- * 5 Saws, cross cut, 20 in., 10 point.
- 15 2-ft., four-fold, box wood rulers.
- *15 Hammers, 13 oz., bell face, adze eye.
- 15 Nail sets, 1-16 in. point.
- *15 ¾ in. chisels, tang firmer.
- *15 3-8 in. chisels, tang firmer.
- *15 Marking gauges, boxwood.
- *15 Jack planes, 14 in., 2 in. cutter.
- *15 Back saws, 10 in., 12 point.
- 15 Bench hooks (shop made).
- 5 Sliding T-bevels, metallic handle, 6 in.
- * Vices, toles, 10 in., iron, wood faced (may be omitted).

2. GENERAL EQUIPMENT

- 2 Steel squares, with rafter tables.
- 3 Saws, rip, 24 in., 6 point.
- 3 Dividers, 8 in., loose leg, wing.
- * 1 Drawing knife
- *15 Mallet.
- * 1 Oiler, brass ½-pint.
- * 1 Oil stone, coarse and fine face, carborundum.
- 2 Pliers, combination, wire cutting.
- 1 Carpenter's pinchers, 8 in.
- * 1 Saw set.
- * 6 Files, slim taper, triangular 6 in.

- * 6 Files, slim taper, triangular 5 in.
- * 2 Files, flat, second cut, 10 in.
- 2 Knives, sloyd.
- * 1 Saw vise (may be shop made).
- * 1 Screw-driver, 8 in.
- 1 Hand grinder, 6 in. wheel.
- 1 Level and plumb, wood.
- 6 10 in. iron C clamps.
- 3 Brad awls, 1-8 in. point.
- 3 Fences, steel square (shop made).
- 1 Plumb bob, brass, 12 oz.
- 1 Hatcher, lathing, 2½ in. cut.
- 1 Doz. carpenter's pencils, 7 in.
- 1 Doz. Eagle or Faber pencils, 2H.
- * 1 Brace, ratchet, 6 in. sweep.
- * 1 Set (13) Auger bits, Jennings pattern, No. 4-16 to 16-16 inclusive.
- * 1 Circular saw, double arbor.
- * 1 Band saw.
- * 1 Jointer, 12 in.
- 1 Disk and drum sander.
- * 1 Boring machine.
- * 1 Lathe, 20 in.
- * 1 Mortiser.
- 1 Tenoner.
- 1 Jig saw
- * 1 Grindstone.
- * 2 Glue pots, electric.
- * 1 Mitre box.
- 2 Sections glue press.
- 1 Tool Crib with small tools.
- *10 Laths, 8 in., swing 36 in.
- * 1 Lath, 8 in., swing 60 in., end fore plate.
- * 1 Oil grinder, 5 stones.
- * 1 Hand and band saw filing machine.
- * 1 24-in. single surfacer.
- 24 Hand wood screw clamps.

ELECTRICAL CONSTRUCTION AND REPAIR

- 2 D. C. switchboard panels and instruments for parallel operation of 2-220 V., 5 K.W. generators.
- 2 A.C. switchboard panels and instruments for parallel operation of 2-10 K.V.A., 2-phase 60 cycle, 125 generators.
- 1 Switchboard panel and instrument for motor generator, set 10 K.V.A. 3 phase, 60 cycle.
- 2 D. C. generators, 5 K.W., 220 V., belted type commutating pole, sliding base and rheostat.
- 1 3-wire generator, 5 K.W., 220 V., rheostat type (belted).
- 2 A. C. generators, 10 K. V. A., 2 phase, 60 cycles, 125 V.
- 2 2 D. C. motors, 10 H. P., 115 V., commutating pole, starting boxes and speed regulators.

- 1 2 H. P. compound wound motor, starting box and speed regulator.
- 1 2 H. P., shunt motor, starting box and speed regulator.
- 2 Motor generator sets—10 K.V.A.
- 1 Rotary convertor—5 K.V.A.
- 3 Transformers, single phase, 2 K.V.A.
- 2 Transformers, two phase, 2 K.V.A.
- 1 Transformer, three phase, 2 K.V.A.
- 3 Storage batteries—6 V., 100 Am. hours.
- 1 14 in. x 5 feet, engine lathe.
- 1 Motor, induction, 1 phase, 2 H.P.
- 1 Motor, induction, 2 phase, 2 H.P.
- 1 Motor, induction, 3 phase, 2 H.P.
- 1 Motor, slip ring induction, 1 phase, 2 H.P.
- 1 Motor, slip ring induction, 2 phase, 2 H.P.
- 1 Motor, slip ring induction, 3 phase, 2 H.P.
- 1 Motor synchronous, 1 phase, 2 H.P.
- 1 Motor synchronous, 2 phase, 2 H.P.
- 1 Motor synchronous, 3 phase, 2 H.P.
- 4 D. C. instruments.
- 4 A. C. instruments.
- 1 Galvanometer.
- 1 Wheatstone bridge.
- 10 Condensers.
- Small tools.
- Benches along wall with individual locker.
- Tool crib—wire.

PLUMBING

In designing a room for plumbing, provision should be made for more than the average ceiling height. This is necessary in order to provide for the installation of plumbing systems in practice houses of at least two stories and a basement. In some cases, schools have arranged for two floors of the building to be given to plumbing, and cut large openings in the floors through which to extend the rough work. In any case, it is necessary to provide 500 to 700 square feet of earth floor space for installing drainage systems in tile and cast iron pipe.

- For a class of 10 to 15 pupils, the equipment should include:
- 3 Metal topped tables, tops $\frac{1}{4}$ x 42 x 92 inches.
- 12 Melting pots with gas burners (or plumbers' furnaces).
- 2 Plumbers' gasoline torches.
- 1 Skeleton of a building for practice work.
- 5 Plumbers' kits.
- 6 Each of 10 in. and 14 in. pipe wrenches.
- 3 Each of 18 in. and 24 in. chain tongs.
- 2 Each 24 in. and 36 in. chain tongs.
- Sets of stocks and dies, cutters, and supplies for lead work.
- A supply of water, gas, and lead pipe, fittings and plumbing fixtures for practice work, including water-closets, urinals, lavatories, sinks, bath tubs, trap vents, and drain and drainage pipes.
- Value of equipment, \$1,000 to \$2,500.
- Annual cost of supplies per pupil, \$10 to \$15.

EQUIPMENT FOR MACHINE SHOP

For the machine-shop work it is assumed that a sufficient number of taps, drills, reamers, chisels, calipers, squares, and other tool-room tools are available for effective work. The maximum capacity of any machine shop for training these mechanics is equal to the number of machine tools, such as lathes, shapers, planers, etc., plus the number of places at the bench.

Course	Per Man	Extra
Lathe	1 lathe and chuck.....	
Drill press	1 drill press	1 drill press vice for 4 men.
Planer	1 planer	1 planer vice for 6 men
Shaper	1 shaper	
Miller	1 universal	50 per cent. of milling machines may be plain
Grinder	1 universal tool grinder or universal grinder.....	
Horizontal boring mill.....	1 horizontal boring mill.....	
Heavy lathe	1 engine lathe and chuck, 18 inches or over.....	
Bench work	1 bench vice, hand tool.....	1 Babbitt ladle and furnace for every 10 men
Tool making	1 bench vice, hand tools.....	1 lathe, 1 universal grinder, 1 universal miller, and 1 layout surface plate for each 6 men

EQUIPMENT FOR VULCANIZING SHOP

1 Gasoline vulcanizer	1 Rubber knife
1 Steam vulcanizer	1 Pair large shears
1 Electrical vulcanizer	1 Wire brush
1 Vulcanizing mold	1 Tread gage
1 Vulcanizing kettle	1 Fabric knife
1 Work bench	1 Pair pliers
1 Machinist's vise	1 Scraper
1 Holding form	1 Tread chisel
1 Flat roller	1 Cement brush
1 Concave roller	1 Tire Spreader
1 Awl	1 Sidewall and retreading vulcanizer
1 Sticker	

AUTO REPAIR AND GAS ENGINE CONSTRUCTION

1 4-cyl. motor—Ford	1 Delco starting and lighting
1 4-cyl. motor—Buick	1 Bosch magneto
1 4-cyl. motor—Continental	1 Splitdorf magneto
1 4-cyl. motor—T-head	1 14 in. engine lathe
1 6-cyl. motor—any make	1 16 in. upright drill
1 Ford chassis, complete	1 Grinder, single wheel
1 Ford chassis, complete with sliding gear transmission.	Small tools
1 Franklin chassis—friction drive	1 Portable crane
6 Carburetors	Benches to run along wall, under windows, and fitted with 18 vises and individual drawers for shop clothes, etc.
1 Gray and Davis lighting, starting system	
1 Remy ignition system	1 Wire tool crib

HEAT TREATMENT OF METALS

1 Gas forge	1 Cyanide and oil bath
1 Case hardening outfit	1 Pyrometer
1 Lead bath	1 Scleroscope

OXY-ACETYLENE WELDING EQUIPMENT

1 Welding station for tank use	1 Cutting torch
1 Back pressure valve, $\frac{1}{2}$ in., with hydraulic relief	1 Lead burning unit, injector type.
	1 Welding torch

PRINTING AND LITHOGRAPHING

2 Platen presses, 10x15	8 Steel type cabinets
2 Platen presses, 14x22	1 Steel press room cabinet
1 Automatic press	1 Steel work bench and auxiliary cabinet
1 Cylinder press	1 Steel locking up materials cabinet
1 Proof press	1 Steel adjustable chase rack
1 Monotype caster and keyboard	1 Steel roller cabinet for cylinder press
1 Linotype machine	
1 Paper cutter, 32 in.	2 Steel filing cabinets
1 Wire stitcher	2 Steel stock forwarding tables
1 Stapler	1 Folding table, $9\frac{1}{2}$ ft. x 3 in.
2 Imposing stones, 51 in. x 75 in.	1 Paper cutter table, 8 ft. x 3 ft.
1 Set drying racks	

LITHOGRAPHING

1 Hand off-set press	1 Ruling machine
1 Hand litho press for transferring	1 Grinding machine for stonework

DESCRIPTIONS OF OCCUPATION

These descriptions of occupations are based on investigations, including personal first hand observations of the occupations, private interviews, and conferences with large groups of employers and employees. The occupational groups include the building trades, metal trades, Navy Yard trades, automotive trades and printing trades.

No attempt is here made to define all the occupations in the industries covered by the survey, rather an effort is made to describe only those occupations for which classes are or may be recommended and courses suggested.

NAVY YARD TRADES

Anglesmiths The duties of the anglesmith are to shape such work as metal frames for tanks, doors, and windows.

The anglesmith bends and welds short lengths and light angular shapes from flat-iron, channel-iron, and tee-iron stock; must be able to work from drawing, patterns, or templates, and with coal, coke, oil, or gas fires. He must direct the work of heaters, handers, and helpers. It is desirable that he be able to do oxy-acetylene, electric-arc, and spot welding on this class of work. He should have good health and physical strength and at least an equivalent of an apprenticeship in the anglesmith trade.

Boat Builder The boat builder in a shipyard constructs, fits up, and repairs all kinds of small steel boats, pontoons and floats.

The boat builder must be a skilled sheet metal worker, capable of working

all gauges of steel up to and including 10 guage. He must be able to work from drawings and templates. In addition he must have a full knowledge of all boat builder's tools; be able to solder with soldering copper or blow torch; must be able to set forms, bend frames, lay decks, and line up a boat.

The boiler maker's work consists of general new boiler construction and overhauling, patching, hot and cold retubing, and general repair and maintenance of boilers, both fire and water tube.

The boiler maker must be capable of working from blue prints, laying off plates and template forms, bending plates, punching, shearing, riveting, chipping, calking, and tube setting, and placing staging. He must have a practical knowledge of all phases of boiler construction and the use of boiler-shop machinery and tools. Must be capable of straightening buckled plates, patching, retubing, making general boiler repairs, and it is desirable that he possess a working knowledge of oxy-acetylene welding and cutting.

The ship carpenter on wooden ships does the usual kind of ship carpentry, such as planking, beveling, dubbing, scarfing, squaring, strapping, and spar making. On steel ship work he erects staging, lays wooden decks, builds launching ways and launching cradles, and assists in launching.

He must be thoroughly skilled in the use of the ordinary carpenter's tools and in addition have special training with the adze, broadaxe, and other special ship tools. He should be able to work to drawings and understand framing and sheathing work and should be capable of doing rapid, rough work, both by hand and with the ordinary wood-working machines.

The duties of the calker are calking and sealing bell and spigot cast-iron pipe of all kinds.

He must be practically experienced in the laying and calking of cast iron bell ends of the sizes generally used on inside construction. Should be capable of setting and centering pipe, elbows, crosses, valves, and plugs, and yarning, damming, melting lead, and calking with the hand or pneumatic calking hammer and tools. Should have a thoroughly practical knowledge of all ordinary tools and be able to work on any class of work under adverse conditions.

The chipper and calker, cuts, chips, splits, files and calks angles and seams on steel plate work to make joints watertight.

The chipper and calker must thoroughly understand the use of the pneumatic hammer and necessary tools for chipping and calking. He should be able to work on scaffolding and in all sorts of difficult places.

The duties of the coppersmith are to make and repair copper utensils, to install and repair copper piping and connections on such work as boilers, chemical apparatus, and distilling equipment.

He must be experienced in all phases of coppersmith work and be able to work to drawings, sketches, templates or samples and lay out and form from sheet copper such articles as copper kettles and funnels, to install copper pipes for marine and stationary engines and install pipes and make fittings for gas ejector equipment. He must be skilled in bending, shaping, and fitting for pipes for high pressure steam, water, or other purposes. He must also be capable of tipping wooden parts with sheet metal, soldering joints, repairing

gas tanks and radiators. He must be thoroughly familiar with sheet metal pattern layout and making, the use of proper fluxes in brazing, and skilled in the use of brazing furnaces and gasoline blow torches. He must also be familiar with working other metals, such as brass and sheet aluminum.

Drillers, Pneumatic The duties of the operator of the portable drill in outside work in the shipyards are to drill, ream, countersink and tap small holes, and to do cutterbar work for the inserting of patch bolts.

The portable-drill operator must be able to operate and adjust all kinds of electrical or other types of portable power-driven drills, breast drills, or ratchet drills. Must be able to fix all brackets and clamps for the supporting of the drills, and be able to adjust and sharpen cutters.

Electrical Workers The duties of the ship electrician are the installation and operation of electrical equipment of all kinds on large ships.

He must be a thoroughly experienced ship electrician capable of installing according to drawings the complete electrical-wiring system used in ship construction for lighting, auxiliary, power, telephone, bells, annunciators, and all signaling devices. He must be thoroughly skilled in water-tight conduit work and the use of various types of marine conduits, outlets, switches, and wiring devices of all kinds. He must have a knowledge of the care and operation of generators, motors, searchlights, storage batteries, and other auxiliary apparatus. Must be capable of locating and repairing all kinds of wiring defects and of making minor repairs on various types of ship electrical appliances, such as motors, searchlights, cooking ranges, ovens, fans, and irons. He should have a knowledge of the construction of wireless systems and have had similar experience on any large passenger, freight, or war ship.

Electric Welders The duty of the electric spot welder hand is the operation of any standard make or size of electric spot welding machine, on any class of sheet metal or plate work.

He must be experienced in the use and care of electric spot welders and should have sufficient knowledge of electric wiring and welder construction to keep the equipment in good working order. He should be able to form, set and adjust contacts, brackets, and supports for any variety of work and fully understand rapid and correct method of handling to insure positive welding of simple or intricate pieces. He should have had spot-welding experience in a metal furniture or large sheet-metal-products plant.

Ship Joiners The ship joiner does the interior finishing on the ship, including cabin and stateroom work, stair building, etc. He also builds and assembles furniture, sideboards, bookcases and deck houses.

The ship joiner must be able to read drawings, to do all kind of cabinet making and joinery, to operate woodworking machinery, and be familiar with the peculiarities of ship construction, such as the use of the bevel and bevel board.

Loftsmen A loftsmen is a man who lays out the lines of the ship full size on the floor or scribe board from tables and drawings furnished by the drawing office, and develops and makes full-size wooden or paper templates for the different parts of the ship. A linesman is an expert loftsmen. A developer is a loftsmen particularly skilled in work requiring development of curved plates.

He must know geometric construction, and developments thoroughly. He must be thoroughly familiar with hand carpentry tools and with the ordinary machine tools, such as cross-cut, rip, and cut-off saws, planers, joiners, and band saws.

Machinists A machinist, classified as a journeyman or all-round machinist, is employed in the construction and repair of the metal portions of all types of machines and tools.

He should read drawings to the extent of making orders for materials, making construction layouts, and obtaining a full comprehension of mechanical requirements from the shop blue prints.

He should use skillfully the ordinary machinist's tools, consisting of steel rule, square, hammer, center punch, scratch awl, dividers, screw drivers, inside and outside calipers, combination set, protractor, surface gauge, trammel points, depth gauge, vernier caliper, bar-caliper, drill gauge, thread gauge, thread micrometer.

It is desirable that he know the mathematics of pulley ratios, feed-gear ratios, back-gear ratios, taper computations, speeds and feeds, and change gears for thread cutting. This would require a knowledge of the following mathematics: Common fractions, decimals, proportions, simple algebraic equations, use of formulas, square root, making and reading of graphs, solution of right-angle triangles.

He should have a general shop knowledge as follows: Belts, pulleys, lubricants, to include oils, greases, and cutting compounds, counter shafts, line shafts, cone and geared head machines, motor drives, fits and finishes, cutting speeds, gear combinations, general knowledge of thread systems, standard V and square threads, special threads, double and triple threads, standard tapers, and polishing materials, use of handbooks, reference books, and catalogs.

He should know the names, care, and use of common machine-shop tools, such as wrenches, clamps, dogs, arbors, chisels, hack saws, files, scrapers, dies and die holders, reamers, hand drills, and breast drills. He should have a working knowledge of cast iron, wrought iron, malleable iron, machinery steel, cold-rolled steel, tool steel, high-speed steel, brass, copper, Babbitt metal, and solder.

He should also know stock sizes of common machine-shop materials such as washers, bolts, nuts, machine screws, cap screws, set screws, etc.

He should operate skillfully the standard machines to do the types of work indicated below, and should be able to grind and oilstone all cutting tools used.

<i>Bench Hand</i>	<i>Plain, horizontal milling</i>
Chipping and filing	Slotting
Assembling	<i>Drill Press</i>
Scraping	Making layout
Laying out work	Drilling
Babbitting	Flat work
Soldering	Circular work
	Boring
	Countersinking
	Facing
(Same as "Bench Hand," only on large machine)	Beaming
Milling machine	Jig work
	Tapping

Engine Lathe

Care of centers
 Turning on centers
 Turning on mandrel
 Chuck and faceplate work
 Boring
 Facing
 Reaming
 Thread cutting
 Taper cutting
 Knurling
 Filing
 Polishing

Grinder

Plain cylindrical grinding
 Surface grinding
 Internal grinding
 Taper grinding
 Cutter, drill, and reamer grinding
 Sawing
 End milling
 Vertical milling
 Taper milling
 Drilling
 Boring
 Counter reaming

Molders

The molder does foundry work on molds for iron or brass castings on all sizes and shapes of castings.

The molder must be a thoroughly experienced practical molder on miscellaneous and moderately large iron and brass foundry work. He should have thorough knowledge of general foundry practice and be able to produce first-class work or intricate castings. He should be familiar with the nature of molding sands, able to mix the same, and make dry-sand facing washes. He should understand core making and setting, gating, and screw placing for best results. He must be familiar with lifting and handling small and medium size molds, and should have some knowledge of the use of molding machines and best mixtures of sand, and have a knowledge of the casting temperature of iron and brass. He should have had thorough experience in some commercial foundry.

Painters

The duties of the painter on structural steel are to paint or cover with any anti-rust coating structural steel in the process of erection.

He should know how to prepare metal surfaces for the receiving of paint; should be familiar with paints generally used on structural steel; understand the care and use of all tools and paint brushes; should be able to judge the proper consistency of paint to be used; and should be able to work on scaffolding or climb upon structural work.

Reaming

Plain and compound indexing as applied to bolt heads, nuts, straight fluting, spiral fluting, and stagger fluting
 Graduating
 Gear cutting
 Rack cutting
 Hobbing
 Cam milling

Planer

Planing, regular, horizontal, and vertical surfaces.
 Taper planing
 Slotting
 Key seating
 Circular planing

Shaper

Planing, regular, horizontal, and vertical surfaces
 Taper planing
 Irregular shaping
 Slotting
 Key seating
 Shaping on centers
 Back cutting

Pattern Makers The duties of the pattern maker are to make forms by the use of which the foundry man shapes the mold for the purpose of producing metal castings.

The pattern maker must know the foundry requirements of the pattern; must be able to work from drawings sufficiently well to make all pattern layouts from the ordinary shop drawings. He should be able to scrape, file, ship, drill, solder, and do lathe work, milling-machine work, planer work, and drill-press work. He should understand pattern gauging and the making of metal core boxes. He should be thoroughly familiar with all types of wood pattern making. He should have good strength and ordinary health and endurance. He must have had experience as an apprentice and as a journeyman pattern maker.

Plumbers The duties of the marine plumber are the installation and repair of all kinds of plumbing equipment and fixtures on board ship.

He must be a practical plumber, experienced in installing all kinds of sanitary plumbing appliances, such as toilets, sinks, drains and waste pipes. He must have a thorough knowledge of all kinds of pipe fittings. Must be able to work from drawings or templates and be able to make his own templates. The marine plumber must be especially skilled in bending all sizes of pipe, and in handling large sizes of lead pipe. He should not have less than an equivalent to an apprenticeship under a journeyman plumber.

Punch and Shear Men The duties of the punch press hand are to set up dies, make all machine adjustments, and run punch presses for all kinds of work usually done on a punch press.

He should know the name, care, and use of the principal parts of standard punch presses; must especially know how to use all safety and controlling devices. Must be able to order all stock, to check all punchings with the drawings and specifications, and take full charge of setting up dies and checking dies and fixtures in and out of the tool room. He should have had considerable experience as a punch press operator and have done some work as a punch press hand.

Pipe Fitters The duties of the journeyman pipe fitter are to install pipe fittings for general purposes.

He must be a thoroughly practical pipe fitter, able to lay out from drawings or sketches, and do any general work in connection with installing permanent or temporary gas, air, oil, or water piping. Should have general knowledge of steam-pipe work, boiler and pump connections, and steam apparatus, and should be competent to work under direction on installation or plant maintenance work.

Riggers The ship rigger's duties consist of the installing of all tackle and the fitting of wire and manila cable used on board ship; also manufacturing and installing shrouds, stays, lifts, braces, and life lines and other rigging fitted to masts, spars and booms.

The ship rigger must be able to work to drawings and specifications furnished by the draftsman; must be able to lay out and cut material. He should be able to sew canvas either by hand or on machine. He should be able to splice manila rope and wire cable and do all work necessary completely

to rig the ship. He should have served in a ship rigging crew long enough to be thoroughly familiar with the required work.

Riveters The riveter on boiler plate, ship plate, and on structural steel must be able to do all classes of riveting on steel plates over one-fourth inch thick.

The riveter must be able to operate skillfully all sizes and kinds of pneumatic hammers used in riveting. He should understand the proper drawing of rivets and the setting of joints to make them water-tight and steam-tight. He must direct the work of rivet heaters, holders on, and rivet passers.

Sheet Metal Workers The sheet-metal workers on metal ranging from 16 to 10 gauge, for the purpose of this classification of occupations is defined as a man employed in the manufacture of such work as light tanks, range boilers, air and gas pressure tanks, and gas buoys.

He must be able to work from drawings, samples or patterns, use skillfully all the ordinary sheet-metal, bench and floor tools, including metal breaks, bending rollers, rotary shears, and straight shears. He should have a thorough knowledge of riveting, hot or cold, and it is desirable that he understand electric spot welding. He should be able to bend and shape light angle and T-irons where they are used for supporting sheet-metal work.

Ship Fitters The ship fitter follows the plate and frame erectors and makes templates and layouts for special forms and shapes that must be made directly from the ship.

He must be able to work to drawings, make wooden templates, and make or direct the shaping and fitting of the special parts for which he has made the layout. He should be familiar with the ordinary hand carpentry tools, be able to run ordinary woodworking machinery, such as crosscut, rip, and cut-off saws, planers, joiners, and band saws. He must be thoroughly familiar with developments and layouts. He should have had sufficient experience in a ship-fitter's crew so that he can do independently ordinary ship-fitter's work.

BUILDING TRADES

The duties of the general carpenter are carpentry work of any character. He must be a practical general carpenter on all kinds of construction or repair

General Carpenter work, capable of working to drawings or sketches on buildings, barracks, or shed construction and repair. He must understand framing and sheathing, and must be able to make all layouts for windows, door frames, and other openings ahead of bricklayers, cement workers, and other building crews. He should be skilled in the use of the usual carpenter tools and materials, and be a good hatchet and saw man, capable of doing rapid rough work. He should have some knowledge of concrete form work and roofing with shingles or paper. He should have had experience on concrete work or as a house carpenter.

Bricklayer The journeyman bricklayer must lay, under the direction of the foreman, all kinds of interior and exterior walls for buildings, using soft brick or glass brick, set terra cotta and light ornamental stone work. He must also be able to set any of the gypsum or other substitutes for brick used in fireproof cross walls.

He should be able to read drawings, lay all forms of ornamental bond, and follow properly the layout furnished by the carpenter or bricklayer fore-

man. He must be able to run up corners and wall openings and set arches that have been laid out by the bricklayer or carpenter foreman.

The work consists of plastering wall, ceilings, and other surfaces, by the use of the trowel, hawk, and other tools; the plasterer also does ornamental work such as cornices and moldings with stucco, cement, and other materials. Three-coat work is generally done upon flat surfaces; the first coat, consisting of plaster containing hair, is well scratched and roughly smoothed; the second coat, which is like the first, except that it contains no hair is put on and floated; the third, or finish coat, consisting of lime and Plaster of Paris, is put on very thin and the surface smoothly finished.

The duties of the journeyman plumber are the installing sanitary plumbing and appliances, such as toilets, sinks, drains and waste pipes.

Plumber He must be familiar with general piping and lead pipe work, pipe fittings, calking joints, and making service connections. Should have some knowledge of hot water and steam heating systems. Should have had an experience equivalent to an apprenticeship to a general plumber.

The duties of the journeyman steam fitter are to fit all types and sizes of steam pipes; to make pump, boiler, oil, air and radiator connections, under the direction of a superintendent or foreman.

He should be able to work from drawings or templates; should have a through mastery of all common steam fitting tools; should be able to place and adjust all types of steam valves and gauges, calculate and cut lengths of pipe, and order materials. He should have had experience equivalent to an apprenticeship under a journeyman steam fitter.

The work of the plumber consists of laying lines of pipes for water, gas, and sewer systems from the street main to and beyond the **Plumber** line of the house; the installing in buildings and residences of plumbing fixtures and their appurtenances, such as filters, meters, tanks, bathtubs, showers, washbasins, sinks, water-closets and urinals, and all connections for toilets; fixtures and pipes for gas, sewerage and drainage purposes.

The work of the steam fitter consists of installing steam and hot-water heating, and refrigerating plants of every description. This **Steam Fitter** work involves the cutting of pipes to length and the threading of ends, making connections and running lines of pipe; making connections for ice and refrigerating plants, installing power pumps and making all necessary connections.

The work of cabinetmaking and of such other allied occupations as chair-making and box-making is to use hand tools, and sometimes **Cabinet-Making** certain machines, in putting together furniture, interior wood-work, or manufactured articles of wood. In some factories furniture is actually built or a completed product. In others the mechanic performs a few operations and passes the work on.

Men who assemble furniture must apply glue to the joints, nail and screw parts together where necessary, and see that the finished product is clean, square, and solidly built. They use a variety of hand tools and sometimes take material to machines for certain operations. They are expected to leave surfaces well scraped and sanded. In all high-class work they must show

considerable skill in construction and knowledge of design. What tools are used will depend on the line of work. They are usually the property of the workman and are kept in order by him. They include the usual outfit of hammers, squares, saws, rules, shaves, chisels, bits, levels, planes, rasps, etc.

Workmen at the trade are mainly occupied in cutting out shapes or patterns, bending and forming these shapes on machines or with hand tools, and assembling the parts by hand. Edges are fastened together

Sheet Metal Work by riveting, soldering or by lock seams. For example, a shaving-exhaust system consists of suction pipes, an exhaust fan, and a large pipe leading to the outlet, at which point is a dust separator called a cyclone. Practically all of the system is built of galvanized iron in sections, which are first constructed in the shop, then erected and supported in place in the factory where it is to be used. All of this work, including the erecting, is done by sheet-metal workers.

It is the work of the journeyman in a job shop to use the common machines for cutting and forming the sheets of metal, to rivet or solder the parts together, and to fasten them in place on buildings or in any location where the product is used.

This job-shop worker is, therefore, commonly both an outside and an inside worker. He must know how to place on buildings all the roofing, skylights, gutters, down spouts, cornices, metal ceilings, etc., needed in the construction. He installs air ducts for hot-air furnaces and for ventilating purposes. He may be called on for a variety of repairs on sheet metal—to line tanks with lead, copper, or zinc, and to make and attach guards for machinery. The material for this work is bought in the form of sheets of various sizes, and the workman spends a large part of his time in the shop cutting up this material and working it into the required form.

Extreme accuracy of measurement is seldom necessary, and not much attention is paid to finish since much of the work is immediately painted.

In the building of ships there is a great variety of sheet-metal work done. Heavier gauge metal is used than on most architectural work and the joints are more often required to be oil and water-tight.

In the automobile and motor truck industry many men are employed in the making and assembling of bodies, fenders, tanks, and radiators. Much of the formed work is drawn to shape in large presses, the finished shapes being assembled by hand.

Large factories now produce most of the kitchen utensils and stamped sheet-metal ware. This ware is coated with enamel or japan, or plated with nickel. Tin plate is still used, but sheet aluminum and enameled steel ware are fast taking its place. The manufacture of metal containers for canned fruits, meats and fish, oils, and sirups is an important industry. Very few machines for any purpose could dispense with sheet metal parts without increasing the weight or the cost. In building construction the use of sheet metal is increasing and when properly protected with paint it is both durable and inexpensive. Sheet metal is taking the place of wood for lath, sash, and trim for fireproof construction in large office buildings. It is used also in the manufacture of metal furniture for schools and offices.

A man or a company engaged in electrical contracting and repairing installs

wiring generators, motors, and other electrical equipment in buildings. Some concerns install power plants complete. The organization may also include a repair shop wherein are rehabilitated motors, generators, and similar devices. Frequently, such companies have a retail store where energy-consuming devices, such as fan motors, sad irons, electric heaters, incandescent lamps, and other similar articles are retailed to the public. This merchandising feature is one of great importance because it affords a possibility of considerable additional income. Some firms do electrical construction only, others electrical repairing only, and still others merchandising only, or one may combine in its business any two or all three of these activities.

The work consists of preparing for and putting up electric wires for all purposes within buildings and the installation of electric appliances and fixtures for which the wires must be run; this includes such work as wiring for lighting, heating, power, telephone, bell and signal installations. The inside wireman does the work which in some other communities is done by the fixture fitter; he also does some outside wiring and repairing.

The work consists of operating band and circular saws, jointers, planers, lathes, machines for making moldings, tenons, and mortises, and for sandpapering. Logs are cut into timbers and boards and seasoned and worked into sash, doors, blinds, frames, stairs, and columns; timber is seasoned, if necessary, sawed on band saw, planed to proper thickness on planer, cut to size on circular saw, edges trued on jointer, mortises and tenons cut by machine, and work smoothed on sandpapering machine; turned work, such as columns, and rails, is turned on lathe; grill and scroll work is done on jigsaw and saw table; parts are glued and assembled by bench hands.

The work of the painter consists of smoothing and cleaning new surface with sandpaper and duster; removing old finishes by burning and scraping, or with paint or varnish solvents. Where the surface is to be painted, a priming coat is laid on, all imperfections in the surface filled with putty and the final coats applied, each being rubbed down; where the surface is to be stained and varnished, the stain is applied, the pores of the wood filled, and the several coats of varnish flowed on and rubbed down. Other processes performed by the painter are graining, lettering, stenciling, gold lettering on glass, and kalsomining.

METAL TRADES

Drafting is a universal language. It is the natural mother tongue of the mechanic in every country. He who has mastered this language can converse in it freely with fellow mechanics of every race and nationality—the American with the French, the Italian, the Swede, the German. It is the common language of metalworkers, wood workers, builders, designers, and architects the world over.

A machine or apparatus is to be manufactured, a building is to be constructed, a ship is to be built, a map is to be made, an application for letters patent is to be filed; the draftsman is first called upon to draw the details of construction and to make such illustration of the same as may be needed.

The subject of mechanical drawing is of great interest and importance to

all mechanics and engineers. The working drawing takes the place of lengthy explanations, either written or verbal. The better and more clearly the drawing is made the more intelligently the workman can comprehend the ideas of the designer. When it is once understood that the basis of mechanical drawing is geometric in nature, its universality is recognized; its language is understood by native and foreigner alike. When we once understand this language we are prepared to understand mechanical drawings no matter where made. Its great scope must then appeal to one as a means of international communication in the industrial field.

Pattern Making The duties of the metal pattern maker are to make metal forms by the use of which the foundry man shapes the mold for the purpose of producing metal castings.

The metal pattern maker must know the foundry requirements of the pattern; must be able to work from drawings sufficiently well to make all pattern layouts from the ordinary shop drawings. He should be able to scrape, file, chip, drill, solder, and do lathe work, milling-machine work, planer work and drill-press work. He should understand pattern gauging and the making of metal core boxes. He should have good strength and ordinary health and endurance. He must have had experience as an apprentice and as a journeyman metal pattern maker.

Where necessary full-size drawings from blue prints are prepared. Well-seasoned wood of best grade is selected—hard or soft, depending on the number of castings required. Parts, shaped by hand and machine tools, are assembled, with regard to draft or taper, leaving pieces loose to facilitate drawing from mold. Assembled parts are sandpapered and shellaced. In making core boxes, where these are required, similar processes are involved. Accurate construction of pattern and core box is necessary to insure proper thickness of metal in casting.

Boilermaker The boilermaker's work consists of general new boiler construction and overhauling, patching, hot and cold retubing, and general repair and maintenance of boilers both fire and water tube.

The boilermaker must be capable of working from blue prints, laying off plates and template forms, bending plates, punching, shearing, riveting, chipping, calking, and tube setting, and placing staging. He must have a practical knowledge of all phases of boiler construction and the use of boiler-shop machinery and tools. Must be capable of straightening buckled plates, patching, retubing, making general boiler repairs, and it is desirable that he possess a working knowledge of oxy-acetylene welding and cutting.

The work of the machinist consists of finishing castings and forgings to size, and erecting and repairing machinery. Bench or vise work, machine work, and floor work are involved in these processes, which include chipping, filing, drilling, tapping, reaming, turning, facing, boring, planing, cutting gears, and scraping bearings. The all-around machinist is skilled in the use of portable and hand tools and in the operation of lathes, drill presses, reamers, planers, shapers, vertical and horizontal boring mills, gear-cutting, and other special machines. Scraping bearings, assembling parts, and erecting are floor-work processes, except in the case of light machines, which are assembled at the bench.

The work of the molder consists of placing pattern on follow board in flask; distributing facing sand over pattern; filling flask with unriddled sand, ramming, rolling over flask, and dressing face; placing cope on drag; distributing facing sand; placing gate and riser pins, and filling and ramming cope; making vents to carry off gases; placing cover board; rolling over cope, and finishing face; withdrawing gate and riser pins, and pattern; dressing up mold; cutting groove from gate pin to pattern; replacing cope on drag clamping, pouring in molten metal, and after cooling turning casting out of flask to be sent to casting shed for cleaning.

Running lines of wrought iron, brass, copper or lead pipe, for conveying gas, water, steam or air, and making necessary connections. The processes include cutting the pipe into lengths with pipe cutters,

Pipe Fitter threading the end with hand or machine dies, bending pipe by hand or machine, making joints with white lead, red lead, or gasket of various prepared materials, and fitting or screwing on couplings, nipples, ells, tees, or other connections with various kinds of wrenches. Workers specialize to a greater or less extent in the several classes of work.

The work of the car repairer consists of repairing wood and steel cars, trucks, and air brakes. The processes include replacing end and longitudinal

Car Repairer sill, body bolsters, needle beams, crossties, bulkheads, partitions, and other parts in wood-car bodies; straightening sheets and steel parts, riveting plates and other similar work on steel-car bodies; repairing and building car platforms and steps; applying and testing airbrake rigging, except valve work; putting on hinges, door locks and window locks, hand-baggage racks, cord hooks, lighting fixtures, and other metal trimmings; repairing and making chairs, tables, and desks, and wood finishing in cars.

The work of the machine woodworker consists of getting out material used in repairing cars by operating such machines as the following: Circular

Machine saws for cutting off, ripping, and sawing angles; band saws for cutting angles and irregular shapes; scroll saws for

Woodworker sawing curves and scrolls; planers for cutting to required thicknesses; jointers for straightening, smoothing, and beveling edges; mortising machines for cutting mortises; tenon machines for cutting tenons; molding machines for making ornamental moldings; shapers for finishing edges of work of irregular shapes; sandpapering machines for dressing surfaces; lathes, boring machines, and various automatic machines for sharpening saws and edged tools.

The work of the railway car painter consists of rubbing down car exteriors with coarse and fine sandpaper; applying wood filler, and three coats of body color, each coat being rubbed down with pumice

Railway Car stone and water; putting on exterior decorations of lettering
Painter and stripes; and varnishing entire car. Interior woodwork is sandpapered smooth, shellaced, and given three coats of varnish, each coat being rubbed down with pumice stone and water. In refinishing cars old paint is removed and car scraped, scrubbed, and sandpapered. Steel cars are given five or six coats of body color; freight cars two coats.

AUTOMOTIVE INDUSTRY

Automobile Repair In automobile repair and service specialization is rapidly creating six principal groups of workers. It is true that in small garages one man may tinker with all parts of an automobile, but it is in fact just as essential to employ, for example, a battery specialist for a machine as it is to employ an eye specialist for a person.

The six groups include: (1) Repair-shopmen, who deal primarily with the mechanical treatment of the car when it has been disabled; (2) starting and lighting experts, who repair and adjust electrical equipment, including wiring, lights, motors, and generators; (3) ignition experts, who look after the testing, adjustment, and maintenance of current supply, short circuits, contact breakers, vibrators, spark plugs, coils, condensers, connections, distributors, and magnetos; (4) storage battery men in station where batteries are charged, repaired, rebuilt, tested, kept in good working condition; (5) tire-repair men, who take care of the splicing, patching, retreading, building up inside repair, and vulcanizing of casings and tubes that have been disabled by punctures, blisters, blow-outs, rim cuts, and general wear; and (6) automobile and truck drivers, who are responsible for operation of cars on the road. The work of these groups embraces a greatly diversified field of employments and offers a wide range of occupational choice.

The repair of automobile tires, including casings and tubes, is almost invariably assigned to a specialist, although many of the minor repairs, such as patching tubes, are done by owners or amateur repairers.

Vulcanizing Tires are probably the most delicate and the most misunderstood part of the car, as well as being the part receiving the hardest use. To secure the greatest mileage and the least trouble from tires they must receive the proper treatment and have the attention of a specialist when trouble develops.

The tire repairman should have a knowledge of tire construction and be well versed in tire troubles and their causes in order to make proper diagnoses of the cases. This knowledge is necessary also in making adjustments on tire mileage, which is, in connection with the tire sales agency, a business very often established as an adjunct to the repair business.

The shop work of the repair man deals with casing troubles from punctures, blow-outs, rim cuts, blisters, stone bruises, and with the preparation of the tire for repairing, relining, retreading, and vulcanizing. Tubes have to be patched, spliced, and vulcanized. Valves in the tube stem will often cause trouble by leaking, but can be remedied by replacing with new valves. Sand blisters can be cured by opening the blister with a sharp knife, cleaning out the dirt and filling the hole with a self-curing rubber filler. A blow-out caused by a weak place in the casing usually by a sand blister or stone bruise can be remedied by the inside method or a combination inside and outside method. Both methods consist in removing layers of fabric and applying fabric patches. When the outside has been properly built up with fabric and the chafing strips applied, the cushion gum unit can be applied and the whole casing then placed in a sectional mold where heat applied to both the inside and the out will cure the job. Rim cuts are repaired in a similar way. Retreading is done by first cleaning down to the carcase and applying coats of vulcanized to the inside of a casing to take care of inside fabric breaks.

The work on the inner tube consists in patching to cover small holes, cuts, pinched tubes and minor injuries.

Vulcanizing, which should be done on large patches, is also the best remedy for any repair. It is done by first cleaning the hole, preparing the patch, and placing and vulcanizing. Inserting new sections or splicing tubes is done by removing the damaged section, inserting a new one, and vulcanizing, one splice being made at a time.

Acetylene Welding Acetylene welding is used in all plants within the metal trade, for it extends the possibilities of a weld to nearly all kinds of metals including not only wrought iron and steel, but cast iron, malleable iron, aluminum, copper, brass, and bronze.

The weld is produced through the intense heat flame of the oxyhydrogen or oxy-acetylene blow torch flame, with which a temperature of 6,300 degrees F. is possible. Filling rods of the same material as the two parts are used.

Acetylene or autogenous welding is a comparatively new method, with a very wide range of uses, and is particularly valuable in repair work. Its greatest use in the auto industry probably is in the building up and repair of broken castings of engine parts, crank cases, cylinder blocks, and of the transmission and differential gear housings. The strength of the welded joint equals or exceeds that of the rest of the part.

The outfit usually consists of two tanks—one of oxygen, the other of dissolved acetylene gas under pressure—mounted in a truck or carrier with the welding torch and necessary connections and gauges to control the gases for the proper flame.

Since the outfit is portable, its use is general for repair jobs, which can be made anywhere without the expense of shipment of the parts.

The requirements of acetylene welding are a knowledge of the welding outfit, of care of the gas tanks, of the care of the torch to prevent heating, of plugging the welding tips, and of their adjustment for the kind of work. It is possible to learn the operation on simple work in iron and steel in a comparatively short time. Welding aluminum, which has a low melting point of about 1,200 degrees, requires more skill than welding in iron. The high conductivity of aluminum, and the fact that it has the greatest expansion range of all metals requires care to avoid strains or breaks. Welding of irregular shaped parts, such as cylinder blocks and crank cases, demands a knowledge of preheating and reheating to prevent irregular shrinkage on cooling.

The intense brilliancy of the flame demands colored glasses to protect the workers' eyes. Otherwise there seems to be no danger to the health or strength of the worker. The relatively high wages paid, considering the time required to acquire the necessary skill, makes the job an attractive one to young men in the industry. The number of plants using these outfits is increasing rapidly. The supply of operators is small, and skilled welders are hard to find, altho six months' experience with proper instruction, will give a worker all the skill required for general repair work. Repair plants are continually training men in order to get the required skill for the most difficult work.

PRINTING TRADES

The work of the hand compositor consists of assembling type by hand and includes straight composition, setting tables, and display work. The straight-matter compositor, setting (as he does) solid matter, such as book text, concerns himself with proper spacing and length of line; the tabular-matter compositor must exercise mechanical skill and ingenuity in spacing and in cutting and fitting rules; the display or job compositor requires a knowledge of the principles of design and of color harmony, and must possess skill in spacing and aligning.

In linotype composition a line of type is composed, justified, and cast in one piece (slug), the whole process being performed by the operation of a key-board machine. The operator must have a thorough knowledge of the mechanism of a complicated machine, and facility in its operation; to this extent he must be a machinist and a machine operator, as well as a compositor.

The work of the monotype operator consists of machine composition by the operation of a keyboard machine, which produces a roll of perforated paper copy. The operation of this machine is somewhat similar to the operation of a typewriter, except that the keyboard contains many more keys. The perforated paper copy is run through an automatic type-casting machine in which the mechanism for selecting the matrices and casting the type and placing it in position is operated by jets of air forced through the perforations in the copy.

The work of the stereotyper consists of casting metal plates of forms of type or engravings made up as for direct printing. The process includes preparation of a matrix sheet or mat, composed of unsized paper covered with sheets of tissue paper pasted on and rolled down. This mat, moistened, is imposed on the type form and either beaten in with a stiff brush or subjected to pressure and heat under a power roller. From this matrix, placed in the casting box, the plate is cast.

The work of the proofreader consists of reading back first proofs to manuscript copy, indicating departures from copy, and where more than one proof is pulled sometimes reading back second or third proofs. The proofreader queries doubtful points to the author, to whom the revised proof is sent with original manuscript. The proofreader may be assisted by a copyholder, who reads aloud from the copy. He must be familiar with the conventional symbols used in marking proofs.

The work of the make-up and stonehand consists of dividing galleys of type into pages, inserting cuts and running titles, spacing pages to equal lengths, and tying up page forms; page proofs are pulled and corrections made. The page forms are then imposed by the stonehand in forms ordinarily of from 4 to 32 pages upon an iron or stone topped table; the forms are enclosed in a chase or iron frame, margins spaced, type leveled, and forms locked up. These processes are closely related and are frequently performed by one man.

The work of the cylinder pressman consists of adjusting type forms

or plates received from composing room to bed of press, preparing tympan or impression surface, regulating ink flow, pulling proofs, underlaying or overlaying to insure clear, even impression, adjusting for margins, and making register. The pressman has supervision over all presswork and cleaning of forms, rollers, and press. In multi-color work care must be taken that sheets which must be fed through the press more than once do not stretch or shrink owing to atmospheric conditions or handling.

The work of the press feeder consists of feeding into the press paper upon which the impression is to be made. The platen-press feeder must remove the printed sheet from the press, whereas the cylinder-press

Press Feeder feeder simply feeds in the paper, the press delivering the printed sheets automatically. Small work is done on the platen-press, hence the platen-press feeder has small sheets to handle, while the cylinder-press feeder is required to feed in large sheets.

The work of the steel and copperplate engraver consists of engraving or etching on copper or steel. The engraver may originate the design which he cuts into the plate or etching ground, working under a magnifying glass. The burr raised by the graver is burnished off. In etching, the plate is covered with an etching ground of wax or other acid-resisting substance, in which the design is cut, the plate being subsequently subjected to an acid bath until the lines are bitten into the plate.

The work of the plate printer consists of printing from engraved plates. To make ready an impression is pulled, trimmed, and pasted to back of plate to relieve pressure on plate margins; the plate is then glued

Plate Printer to bed of press and guide marks added. In printing a sticky ink is rubbed over the plate, wiped off, and the surface polished with whiting; a card is placed on guide marks and press operated to bring the plate under pressure between cylinders, causing ink-filled lines to print.

The work of the die stamper consists of embossing or stamping in relief letters or design on stationery or cards by hand or power press. The engraved

Die Stamper female die is glued on the die box of the press; a counter die is made by forcing tag board into the engraved die. By operation of the press the design is made to appear in relief upon paper placed between the dies. The female die may be filled with a varnish ink, and two or more colors may be imposed by successive stamping.

The work of the packer consists of examining, counting, and packing of engraved cards, letterheads and folded stationery. The packer is held

Packer strictly responsible for all work sent out, and must instantly detect imperfections due to smearing, improper feeding, defective impression, or changes of color of ink. The packer inserts tissue paper between surfaces to protect work, places folded sheets in envelopes, and packs cards (usually 100 in a box), letterheads (usually 500 in a box) and folded stationery (in small lots). This work is done generally by girls.

The work of lithography differs from typography in that it is surface printing from stone. The stone is chemically treated to make its surface impervious to ink except where the design is etched or drawn; the engraver etches the design on the stone

with a diamond point or draws it in with a lithograph crayon. In each process the design is given an affinity for ink and prints, while the balance of the surface, being moistened in the press, does not take the ink.

From the original key plate prepared by the engraver the transferrer pulls a number of duplicated impressions on paper coated with a mixture of starch,

flour, and glycerine. These duplicate impressions are fas-

Transferrer tened to a sheet of paper and applied under pressure to a large lithograph stone or plate of aluminum or zinc. The inked design is thus transferred in duplicate to the stone or plate, from which final impressions are taken. The key plate is not used in printing.

The work of the lithograph pressman is essentially machine operating, and is similar to that of the cylinder pressman in a letterpress printing establish-

ment. The lithograph press, however, which includes a

Lithograph mechanism for moistening as well as for inking the stone or
Pressman plate, requires more attention than the letterpress printing press, and the lithograph stone is harder to handle than the type form. The inks must be watched for color, and the printed sheets for perfect register and for imperfections.

The duties of a lithograph press feeder are practically the same as those of a feeder on a cylinder letterpress printing press. He

Lithograph feeds the press, helps the pressman make ready, helps make
Press Feeder a general wash up of press and stone, and detects, as far as possible, any imperfections in the impressions.

The photographer in a photo-engraving plant is known as the "operator."

Proto- His work is the operation of a specially designed copying
Engraving camera. The picture or drawing to be reproduced by the
Operator halftone process is photographed on a wet plate through a lined screen, except that when the negative is to be used for a zinc etching no screen is used. The operator develops his own negative, in the form of a collodion film, which goes to the etcher.

The etcher receives from the operator a developed film or negative which has been stripped from the original glass plate and cements it to another glass plate. This is placed on a sheet of highly sensitized

Etcher copper and exposed to intense light, which renders the surface of the copper sheet resistant to acid in varying degrees, dependent upon the amount of light admitted. The sheet of copper is then given a rocking acid bath, to complete the process of etching.

The router, by means of a specially designed machine, cuts out the etching or halftone to proper size and bevels the edges, cuts away or lowers such parts as must be removed for multicolor work, and when

Router the plate has been inspected and corrected by the finisher the router mounts it on a wood block which makes the cut type-high; the router also does some hand engraving at times, such as cutting out of borders.

The "finisher" is a hand engraver, and to him falls the work of correcting small defects in the finished halftone or etching such

Photo- as "cutting out spots" and "building up." He also "tools out" high lights, burnishes shadows, vignettes, and outlines
Engraving the plates for the router to cut by. The finisher also does
Finisher all the fine cutting out that can not be done by the router.

Bookbinding includes the following processes: (1) folding printed sheets into signatures or sections, usually of 16 pages, by hand or machine; (2) pasting in inserts of maps, plates, illustrations, or charts; (3) gathering signatures from piles to compose a book, the gathering being done sometimes by hand, sometimes by machine; (4) collating or examining the gathered signatures to discover misplacements or omissions; and (5) sewing or stitching signatures. These operations, performed by girls or women are generally inter-changeable.

Forwarding consists of four processes. Books are "gathered" or "jogged up" in bunches and the edges "trimmed;" put on a "rounder and backer" where the back is rounded and the front concaved. Next comes **Forwarder** "lining up" or gluing to the back a piece of coarse woven cloth, which projects an inch on either side. "Casing in" consists of pasting the outside of the first and last leaves of the book to the cover, placing it between and applying pressure.

The work of the finisher consists of finishing, which consists of placing the design and title on the cover, is generally done by hand or power presses, special dies, cut from hard brass, being used for the purpose. In fine leather-covered books the design is often "tooled in" by hand. Finishing is done by men, though girls and women assist in a few operations, such as laying gold leaf on the cover preparatory to stamping and inspecting.

SUMMARY OF INDUSTRIES FOR CHARLESTON COUNTY

	No. of Salaried Employees		Average Number Persons Employed	No. Over 16		No. Under 16	
	Male	Female		Male	Female	Male	Female
Bakery Products	9	2	170	137	31	1	1
Boxes and Baskets	8	3	155	136	19		
Canneries	5		50	20	30		
Clothing	6	2	150	16	134		
Confectioneries	3		87	64	14	6	3
Electricity	73	28	684	647	37		
Fertilizer	92	2	1,535	1,525	1	9	
Foundry and Machine Shops	28	5	581	563	18		
Flour and Grits	10		71	71			
Glass			10	8	2		
Ice	1		108	108			
Lumber and Timber	38	8	1,145	1,113	32		
Mattresses and Springs			5	5			
Mines and Mining	15		322	322			
Minerals and Soda Water	7	1	35	33	2		
Monuments and Stones			14	14			
Oil Mills	15		206	165	41		
Patent Medicines			39	25	14		
Printing and Publishing	70	16	305	195	27	83	
Rubber Seals and Stamps	3		72	52	20		
Textiles	46	23	1,552	857	686	5	4
Tobacco and Cigars	7	1	170	26	130	2	12
Turpentine and Rosin	2		22	20	2		
Total	438	91	7,488	6,122	1,240	106	20

SUMMARY OF INDUSTRIES FOR CHARLESTON COUNTY—Continued
WAGES

	Over 16 Years		Under 16 Years	
	Male	Female	Male	Female
Bakery Products.....	\$ 119,498.00	\$ 14,737.00	\$ 150.00	\$ 223.00
Boxes and Baskets.....	71,891.00	12,360.00	.....	.....
Canneries.....	5,000.00	5,000.00	.....	.....
Clothing.....	13,000.00	91,000.00	.....	.....
Confectioneries.....	47,284.00	7,075.00	1,290.00	355.00
Electricity.....	668,263.00	27,800.00	.....	.....
Fertilizer.....	1,318,399.00	208.00	5,678.00	.....
Foundry and Machine Shops.....	774,325.00	11,187.00	.....	.....
Flour and Grits.....	25,582.00	.....	.....	.....
Glass.....	8,200.00	1,680.00	.....	.....
Ice.....	62,715.00	.....	.....	.....
Lumber and Timber.....	446,632.00	3,015.00	.....	.....
Mattresses and Springs.....	6,760.00	.....	.....	.....
Mines and Mining.....	227,536.00	.....	.....	.....
Minerals and Soda Water.....	23,110.00	300.00	.....	.....
Monuments and Stones.....	88,024.00	.....	.....	.....
Oil Mills.....	129,928.00	11,539.00	.....	.....
Patent Medicines.....	26,466.00	7,526.00	.....	.....
Printing and Publishing.....	210,089.00	15,933.00	20,395.00	.....
Rubber Seals and Stamps.....	44,867.00	13,132.00	.....	.....
Textiles.....	750,772.00	284,305.00	2,383.00	1,532.00
Tobacco and Cigars.....	20,513.00	58,013.00	1,040.00	5,240.00
Turpentine and Rosin.....	15,562.00	1,035.00	.....	.....
Total.....	\$ 5,104,416.00	\$ 565,845.00	\$ 30,936.00	\$ 7,350.00

SUMMARY OF RECOMMENDATIONS OF THE INDUSTRIAL SURVEY

Vocational education, admittedly, is a local, not a general issue. It must be adapted in its content and method as well as in its organization and administration to the social, industrial, and educational conditions of the community. Hence the need of a careful analysis of these conditions before any system of vocational training is undertaken.

The following recommendations represent an effort to suggest the best program for the development of vocational training, under the given conditions as shown by the findings of the survey.

1. *Evening vocational school classes for apprentices and journeymen* in the metal, building, automotive, Navy Yard, and printing trades, as follows: Drafting, patternmaking, machine shop work, sheet metal work, plumbing and steamfitting, carpentry, cabinetmaking and joinery, electrical work, masonry, auto-repair, gas engine work, acetylene welding, vulcanizing, ship-joinery, molding, boilermaking, printing.
2. *Part-time vocational school classes* for operatives in the textile industry.
3. *Evening vocational school classes for girls and women* in drafting and tracing, and power machine operating.
4. *Consideration of the introduction of day vocational school work* for the youth of Charleston below 16 years of age at an early date.
5. *Centralization of evening school work*, for apprentices and journeymen.

men in a suitable building, for girls and women in the Memminger School, all under central control.

6. *Appointment of a director for all day and evening vocational school work.*

7. *Appointment of an Industrial Co-ordinator for the schools and the industries.*

8. *Appointment of an Advisory Committee for Vocational Evening Schools,* composed of six members, three of whom should be employers and three representing the employed workers, with the superintendent of schools a member ex-officio.

PART III

SURVEY OF BUSINESS OCCUPATIONS

PAUL S. LOMAX

PURPOSE

The purpose of the commercial survey was to make a study of business positions, both from the standpoint of the employer and employee, in order to learn in what way, if any, the Public Schools can co-operate in providing business courses of study which will be of greatest benefit to men and women now in employment and to public school girls and boys who anticipate such employment.

PLAN OF PROCEDURE

A questionnaire was prepared for the employer and another one for the employee (see Appendix, pages 122, 123). The survey data was collected by workers who made personal visits to the business concerns. Both questionnaires were handed the employer with an explanation of the kind of information that was desired. The employer was asked to request his employees to fill in the questionnaire designed for them, and when these questionnaires were collected, to go over them to verify the statements of employees as to position held and duties of such positions. The employer's questionnaire was usually filled out while the survey worker was present in order to make certain that all questions were correctly understood. This guaranteed uniform interpretation of the questions.

The members of the Commercial Survey Committee included the following prominent and successful business men of Charleston:

H. A. Condon, Chairman

N. Silver	J. M. Visanska
E. H. Poulnot	W. J. Skinner
D. W. Ohlandt	J. Betts Simmons
J. V. McAuliffe	W. F. Livingston
Melvin Furchgott	Isaac Marks
M. B. Barkley	Louis Jacobs
Philip Schatz	Rudolph Siegling

E. Lieberman

ACKNOWLEDGMENT

The writer of this report wishes to acknowledge his deep appreciation for the splendid way in which the business concerns, the Chamber of Commerce, Retail Merchants Association, the Charleston High School and the public schools co-operated in the success of the survey. It is his desire to express special appreciation to the members of the commercial classes of the Memminger High School who gave generously of their time and best efforts in the preparation of the survey report.

DISTRIBUTION OF EMPLOYEES AMONG COMMERCIAL POSITIONS

Table No. 1, page 99, shows the distinction of 975 employees among twenty-eight commercial positions. This distribution represents the report of eighty-two employers. It is given in terms of the number

Employees of of men and the number of women employed in each position. **All Ages** It is to be noted that certain positions, as general clerk, shipping clerk, receiving clerk, stock clerk, bookkeeper and billing clerk, are usually filled by men, whereas certain positions, as stenographer, file clerk and typist, are usually filled by women. The relative number of men and women employed as salespeople is practically the same. Diagrams Nos. 1 and 2, pages 114, 115, are a study of the relative number of men and women of all ages and of those under twenty-six employed in major commercial positions. Billing clerks have been listed with bookkeepers rather than with typists for the reason that the proportion of men and women engaged more closely relates to that proportion among bookkeepers than that proportion among typists. The term, general clerks, includes general store as well as general office helpers. Diagram No. 3, page 116, is a study of the distribution of employees of all ages among major commercial positions without regard to sex.

Employees Table No. 3, page 101, shows the distinction of employees under twenty-six years of age among the same twenty-eight **Under 26** commercial positions. Diagram No. 4 is a graphic study **Years of Age** of this table.

With the exception of the position of salespeople, the relative importance of positions for men and positions for women remain the same as that shown in Table No. 1. In the case of salespeople, however, when we study the younger group of workers, we find there is a greater proportion of women employed as retail salespeople. This is explained by the fact that a large number of younger women are employed in department and 5 and 10 cent stores.

Table No. 2, besides showing the relative importance of positions for men and women, disclose the positions in which younger workers of each sex are found. (A younger worker is one who is below seventeen years of age.) For example, of thirty-six young workers listed in this table, twenty-eight are salespeople. It is important to note that no younger workers are found in positions of stock clerk, receiving clerk, cashier, stenographer, typist and bookkeeper. In other words, maturity is a vital factor in obtaining employment in these positions as well as being trained to do the required duties. It also emphasizes the fact that the education of workers in these positions must approximate high school graduation. It is significant that the minimum age of workers in these positions and the average age of high school graduates are practically identical. We find, for example, that the ages of most of the stenographers group themselves from seventeen to twenty-one years, inclusive.

In Table No. 4, page 102, and Diagram No. 5, we have a study of the general education of 461 employees engaged by eighty-two **General** concerns. Of the 461 cases, 30.1% have had public grammar **Education of** school training, 48.4% public high school training, 4.1% **Employees** college training, 13.7% private secondary school training, 3.7% not classified. Of those having had public grammar school training, 84.2% had advanced as far as the 6th or 7th grades. Of the

223 who had public high school training, 61.9% had advanced as far as the junior or senior years.

These figures show that high school education predominates. This tendency is encouraging in that the employers, in their replies to the questionnaires, have expressed the belief that the minimum general education requirement which business demands in practically all positions is at least high school education. It is also important to keep in mind that of the 461 employees, 50% are over twenty-six years of age (See Table No. 13), who most likely did not have as good educational opportunities as those in the younger group. An allowance for this consideration makes the number who have had public high school education still more encouraging. These facts, as presented in Table No. 4, should bring home to Charleston boys, girls and parents, the point that to get on in business positions with any degree of success and chance of advancement, they must remain in school long enough to acquire at least high school training. To leave school with less than high school education, boys and girls will tend to be trained only for the lower positions which will become to them "blind alley jobs" in that they will not have that amount of general education which will enable them to grow out of the positions in which employed. Only the boy or girl with splendid native ability will here and there prove the exception to this rule.

Table No. 5, page 102, and Diagram No. 6, page 119, present a study of 461 employees who have or have not had business training. It is seen that

Business Education of Employees 6.7% have had business training in public high schools, 20.8% in private business colleges, 2.8% in other schools, and 69.7% no business school training. The fact that 30.3% with business school training over against 69.7% without such training exists among the 461 workers, emphasizes the need for business training in preparation for specific positions both for workers on the job and for prospective workers now in school.

Table No. 6, page 103, is a study of the commercial workers under twenty-six years of age with or without business school training. It shows that when we study the group of workers who have had seemingly greater opportunities for this kind of training, we find that the percentage of those without such training remains practically the same as in Table No. 5.

It is important to observe that of those who have had high school business training, 35.5% were in school one year and less. Of those who have had private business college training, 43.8% were in attendance three months, 31.3% six months, and 14.6% nine months.

These figures show that boys and girls who enroll in business classes remain only long enough to acquire a superficial training. When we also consider that a large percentage of these same boys and girls have very elementary and limited general training, the situation is still more serious. These facts make it easy to understand the numerous complaints made by Charleston business men in their replies to the questionnaire that they frequently find commercial employees seriously weak both in general or foundation education and in specific business preparation. This type of partially trained help does not afford promotional timber—a basic fact which growing firms must consider. The acceptance by business of this class of workers is an economic loss.

Table No. 6 gives the distribution of employees under twenty-six years of age with or without public school education among seventeen positions. It is important to note the heavy proportion of general clerks, cashiers, stock clerks, bookkeepers, and file clerks, who have had no business school training. No salesperson has had any special training. These facts reveal the opportunity for carefully graded school training in preparation of boys and girls for specific business positions, as well as to offer a chance to younger employees now in these positions to improve their efficiency both on present jobs and for advancement out of these jobs in lines of promotion.

Table No. 7, page 104, affords a study of business training received in school in stenography and bookkeeping with reference to kinds of positions in

which now employed. The fact that of fifteen young people

Lack of who were trained in stenography, seven are employed as
Definite salespeople, emphasizes a tendency among boys and girls
Objective to choose business courses in school with no definite type
of business position in mind. Boys and girls are too frequently trained for one kind of position and engaged in another. This is a vital consideration both for schools and employers. The boy or girl who embarks upon a business school course of training should at the outset, as far as possible, determine a definite job objective. Fundamentally, boys and girls should not be enrolled and classified simply in terms of business courses. They should be classified in terms of specific jobs for pursuit of which they are preparing themselves. The first year of high school work must do more than simply prepare for the second year's work, and the second for the third, and the third for the fourth. It is more important that each year's work results in preparation for certain types of positions. In other words, high school courses of study should be so arranged and of such a character that the boy who must quit school at the end of the first year is trained for entrance into certain junior positions, as well as the boy who may remain in school is trained for the more advanced work of the next year.

Experience in the teaching of commercial subjects has taught us that this twofold purpose can be accomplished.*

It at once vitalizes and vocationalizes commercial education. It not only gives the boy who must quit school early in his high school training preparation for specific positions but it gives him in addition, a vivid picture of the advantages of more advanced training. When high schools prepare boys and girls for specific entrance and for jobs into business, they are required to go a step further, Promotion in full justice to such boys and girls, by giving them as much additional training as possible to enable them to grow out of the jobs in line of promotion. If public schools accomplish this result, obviously it is necessary that the range of commercial positions for younger workers be known, the duties and business requirements of these positions be

* Bulletin No. 34, Commercial Education: Organization and Administration, pp. 16-23, Federal Board for Vocational Education, Washington, D. C.

Bulletin, 1919, No. 55, Business Education in Secondary Schools, pp 11-24, U. S. Bureau of Education, Washington, D. C.

ascertained, and the promotional order of the position's be determined.* In the light of this information, school courses of study may be organized to conform with these conditions. Here we have the underlying reason why it is imperative that a school system, if it is to inaugurate vocational commercial education, must conduct a survey such as this one.

Table No. 8, page 104, and Diagram No. 7, page 120, are studies of the length of employment of the 461 employees in their present positions as reported by the employees. We find that 52.7% have been in the continuous service of the firms one year or less, 15.4% more than one year up to and including two years, 7.4% more than two years up to and including three years, 5% more than three years up to and including four years, 17.3% more than four years, with 2.2% not classified.

Table No. 9 shows the length of employment in present positions of men employees under twenty-six years of age, as reported by employees. Table No. 10 gives a study of length of employment of women under twenty-six years of age, as reported by employees.

A comparative study of Tables No. 9 and No. 10 over against Table No. 8 reveals that when we study the younger group of workers, we find that there is less stability of employment. When employees of all ages are considered, we find that 52.7% have been engaged in present positions one year or less. When we consider the younger group, we learn that of the men employees, 71% have been employed one year or less, of the women employees, 68.5%. This is as would be expected.

These figures strikingly illustrate how short-lived tenure of employment is in present positions. The cost of this high percentage of labor turnover is tremendous. A department store in Boston, Mass., which

The Turnover made a careful study of this problem, has estimated that each new salesperson costs the store \$200. This figure is regarded as conservative. Upon this basis, it can quickly be computed how expensive the question of labor turnover is to the firms who reported on this survey. From an economic standpoint alone, this question demands a careful analysis and, as far as possible, a solution. Even more so from the standpoint of the boys and girls themselves, this question deserves serious consideration, for when they tend to be constantly shifting from one position to another, it means that they are not "digging in" and building constructive, definite business careers. They represent business driftwood instead of sturdy growing oaks. Diagram No. 8, page 121, enforces the seriousness of this situation. It is a study of commercial labor turnover in the twelve months preceding May 1, 1920, as reported by employers. (By labor turnover is meant the hiring, discharging and replacing of employees in a given number of positions. That is, if a firm has forty positions, and during a year, it was necessary to engage 120 employees in order to keep these positions filled, the turnover of labor has been 300%.) The diagram shows that the percentage of average labor turnover for twenty-nine retail stores that reported is 111.5%, for three department stores 46.5%, for three 5 and 10 cent stores 443.8%, and for all business, considered as a whole, 74%.

* Survey of Junior Commercial Occupations, Part III, Federal Board for Vocational Education, Washington, D. C.

What is the remedy? The following is that applied by a department store in Boston:

(a) A plan for the careful selection of employees.

(b) Special training courses with careful follow-up and

The Remedy supervision.

(c) Establishment of a definite plan of promotion.

(d) An interview with each employee who wishes to leave in an attempt to adjust all difficulties.

The matter of labor turnover is relatively a more serious problem with retail stores. Courses of study in retail salesmanship and business procedure have been organized and inaugurated in many places in this country to help solve this problem.* A more detailed discussion of this is made in connection with "The Supply of Competent Salespeople," page No.....

The purpose of questions three and four of the employers' questionnaires (see page 122) was to determine if definite plans of promotion generally exist among Charleston business concerns. The replies to

A Definite Promotional Plan Among Business Concerns question three were what would be expected, namely, that 92.4% of the firms reported that it is the rule to promote persons who enter their concerns in subordinate positions. Business firms attempt to reward by promotion faithful service. On the other hand, only 39.2% stated that they have established a definite order of promotion among their commercial positions from lower to higher. It is true that a number of the smaller concerns do not have a sufficient range of positions to warrant the establishment of a definite line of promotion. The next position ahead most likely is that of the employer himself.

It is important, however, that a firm which has a number of employees and a range of commercial positions should establish a definite promotional plan, so that when an employee begins in a lower position, he may not only know the specific duties of his present job, but also know the next job ahead in line of promotion, and the specific duties of that job. Further, this would enable the worker to understand intelligently how the duties of his present job fit in with the duties of the job ahead. This intelligent understanding will not only be of material benefit to the worker in achieving promotion, but to the firm. The success of the one is the success of the other in achieving increased efficiency.

A definite promotional plan is equally as essential to schools in the preparation of "prospective employees" as to the employee on the job. Public schools can best serve the interests of employers when they train prospective employees not for business in general but for business in particular; that is, for specific jobs as ledger clerk, shipping clerk, stock clerk, machine operator, filing clerk, typist and stenographer. At the same time, when boys and girls are trained for specific jobs, it is equally imperative that they be trained not alone for the initial job but beyond this in line of promotion. For example, a boy should not be given merely that elementary knowledge of bookkeeping which would enable him to be a ledger clerk. If it is not at all possible, he should be given a sufficient knowledge of bookkeeping and allied subjects so

* Bulletin No. 22, Retail Selling, p. 15, Federal Board for Vocational Education, Washington, D. C.

that he may be able to progress as rapidly as his ability and training will permit from ledger clerk to assistant bookkeeper, and from that to head bookkeeper. Specific business training for initial positions must always contain the potentiality of getting on to higher positions in line of promotion.

Business men in general express deep concern that boys and girls be trained to do the jobs in which they are employed. These business men at the same time want employees who can grow up with the

Co-operation of Business and School business. Vocational commercial education should function this way, but how well it does depends upon how well employers and public schools co-operate to give boys and girls an opportunity to prepare for positions both by study

in school and by study on the job. It is impossible to expect the public school to turn out thoroughly trained prospective employees in most lines of business endeavor, simply because there are many things which can never be learned in school but must be had on the job. The preparation of competent retail salespeople illustrates this point. Public schools can provide: (1) a necessary fund of general or foundation education, (2) a general business training, (3) a specialized training in the fundamental principles of retail salesmanship, advertising, and organization and procedure. But when this is done, there is need for training on the job in order to develop productive retail salespeople. Job apprenticeship, in other words, can not be had in school. This fact argues the necessity to create a co-operative plan between retailers and the public school authorities whereby boys and girls who prepare for this type of business may receive that amount of school and job training which is necessary to round out and make thorough their preparation.* To make such a co-operative arrangement most effective, it is essential that the firm have a definite promotional plan.

The employees, in their questionnaire (see page 122) were asked to state the name of the position ahead of the present position in line of employment.

Employers were asked to check the answers of employees

The Situation at Present to make sure that their statements were accurate. Of the group of employees under twenty-six years of age, 39% gave the name of the next position, 61% did not. Many of the 61% who did not give the position ahead probably ignored the question. Others had not made a sufficient study of the present position and its relation to the business organization as a whole to definitely ascertain this fact. Others were engaged by small concerns in which the employer himself held the next position ahead. Others simply hold a position which is to them a "blind alley job." This situation, at best, is serious. It is within the full rights of boys and girls both in school and on the job to be given an intelligent and orderly vision of their future possibilities and how they most likely can fit in with those possibilities.

Of the 461 men and women who answered the questionnaire, 69.7% stated

* Bulletin No. 22, Retail Selling, pp. 41-44, Federal Board for Vocational Education, Washington, D. C.

Bulletin No. 34, Commercial Education: Organization and Administration, pp. 23-31, Federal Board for Vocational Education, Washington, D. C.

that they had had no business school training. This indicates a situation of which business men are thoroughly conscious, namely, that practically all employees who come to their service are absolutely untrained except for a general education, and frequently inadequate training has been had in this respect. Business firms in practically all cases are obliged to train their own help, and that without a definite plan of instruction. This training consequently tends to be more or less haphazard, inadequate and costly. It is a problem whose practical solution for Charleston business concerns is not the establishment of special schools by business firms, because in general the size of the firms does not justify this kind of provision. The more practical solution of the problem would be the organization of special courses in the public schools to be offered in both day and evening sessions. Only seven of the seventy-seven firms stated that they maintain schools of instruction or attempt to supervise the education of the younger employees. It is a question for the public school authorities in co-operation with the business employers.

The business firms, in reply to the question as to whether or not they encourage their employees to attend continuation schools in the evening or at other times (by continuation school is meant any school

Business Firms Favor Continuation Classes in which a person may continue his education while remaining at employment), show that they in general favor their employees enrolling in job improvement courses of study. Furthermore, it is significant to know that 20% of the firms in

answer to the question as to whether or not they would be willing to give time off from working hours so that younger employees might attend school, stated that they would be willing to do this, although there is no part-time education law in South Carolina, such as exists in more than a score of the States, which obliges employers to send young employees to school a certain number of hours each week on employers' time.

Practically all employers further declared that promotion is offered to those who would satisfactorily complete instruction in continuation schools. Thus it is found that the attitude of Charleston business men is most commendable in that it is their earnest desire to do everything possible to encourage "job improvement" among the younger men and women now in employment. This fact should be to these young men and women a most happy incentive not only to improve themselves in their present positions but to increase their chances for advancement out of these positions in line of promotion.

The employees, in their questionnaires, were asked what additional school training would be most helpful to them in performance of present duties and in winning promotion to the next position in order of advancement. It is interesting to study Table No. 12, page 106, and note what kinds of subjects are desired by employees. The subjects which are most in demand are business arithmetic, spelling, business English, salesmanship, bookkeeping,* and stenography. The want of these kinds of training has come from job experience.

* Bookkeeping and General Business Courses are classified as the same, since the former is the major subject of the latter.

To meet this want for job improvement is a most important function of public schools.

Table No. 11 is a study of the positions held with reference to the courses desired by the employees. We find salespeople principally wanting general business education, foundation training in the fundamentals, as well as education in the principles of salesmanship. Practically all courses desired represent job improvement which shows that workers have an earnest ambition to increase their efficiency and win promotion.

The employees were also asked as to whether or not they have attended evening or day business school classes while employed in present or previous positions. Of the 230 under twenty-six years of age, 22% answered yes, 74% no, and 4% failed to answer. Of the 231 over twenty-six years of age, 8% answered yes, 88% no, and 4% failed to answer. The fact that only sixty-nine out of 461 cases have attended continuation business school classes, during present or previous employment, points to the great possibilities in this direction.

Both public schools and employers should seek to capitalize this growing tendency among employees by making proper provision for continuation school classes.

Thirty firms say that they have difficulty in obtaining competent salespeople; fifteen say they have not. Attention is drawn to the fact that employers in

their replies have pointed out that the supply of competent salespeople is far more inadequate than that of competent bookkeepers or stenographers. The explanation is obvious. Special school training is offered in bookkeeping and stenography, but none in such subjects as salesmanship, advertising, business organization and procedure. In the one, there is a trained source of supply; in the other, there is not. This situation exists in the face of the fact that there are more young people engaged as salespeople than as bookkeepers and stenographers. (See Table No. 1, page 99, and Diagram No. 3, page 116.)

The Charleston Public Schools, the same as schools in general over the entire country, have in their commercial courses, trained boys and girls for relatively minor commercial callings and have left unnoticed, for example, the major calling of retail salesmanship. Commercial education in public schools has followed the trend of private business college education. This type of education has, from the beginning, specialized in bookkeeping, stenography and general office practice. In general, this is still the practice. Commercial departments, when they were

Supply of Competent Salespeople

Commercial Training in the Schools Must be Broadened

first introduced into public schools, sought to capitalize the long years of experience which the private business colleges had had. The latter school has usually continued in its limited lines of commercial preparation simply because business has been good in those lines. The demand for competent bookkeepers and stenographers, as the replies of the business men show, is still urgent, and most business colleges are busy enough meeting this demand. Public schools, however, should seek to serve the interests of the larger groups of boys and girls who enter business employments. Table No. 1, page 99 is proof of the fact that the positions of stenographers and bookkeepers, for example, are not relatively as important as the position of retail salesperson. Furthermore, they are only two of a wide range of commercial occupations in

which boys and girls, upon leaving public school, find employment. These circumstances mean that we must seek to offer those courses of study which, in the larger number of cases, will function in the job experiences of the trainees.

The training of prospective employees in the field of retail selling is not an untried practice. Our experience has passed beyond the experimental stage.

Well-organized courses of study have been worked out based upon this experience and are now available for school use.*
Retail Selling It only remains for each community to know and study the need and vital importance of the position of retail salesperson in its commercial life.† The survey has brought this matter sharply to the attention of Charleston retail merchants, many of whom have already given this problem serious consideration. They have been quick to appreciate the need for systematic effort in providing facilities for the training of efficient salespeople. Of seventy-one who replied to the inquiry as to whether or not fundamental principles of advertising and salesmanship should be taught as a part of the commercial course, sixty-eight replied yes, and only three said no.

The present-day tendency of public school commercial education throughout the country is to endeavor to the utmost to understand and meet outstanding business needs. The responsibility to make known these outstanding needs, and to provide facilities in meeting them, is as great on the business men as it is on the public schools. Business men are more and more conscious of the fact that the corner stone of business success is adequately trained personnel; that the quantity and quality of the selling force are as vital factors as are those of the goods to be sold. Customers weigh the quality of salesmanship even as they do that of the goods.

Twenty firms have indicated in what ways salespeople are generally deficient. Their comments may be classified as follows:

- (a) Lack of interest and initiative.
- (b) Lack of training in fundamental subjects, as spelling, penmanship, grammar and arithmetic.
- (c) Lack of knowledge of the simpler business forms and general office or store procedure.

The one outstanding consideration, which practically all employers emphasize, is the fact that employees lack adequate general education. Of 278 employees engaged in retail selling who answered the questionnaire, 44.6% are under twenty-six years of age; and of this number, 81.5% are women. There are more younger employees engaged in this position than in any other in the city.

The tendency among those who leave school for various reasons, either in the grammar grades or in the first years of high school, is to seek retail selling positions. For the most part, those who seek this position are girls. These girls have usually had neither adequate general education nor the simpler forms of business training. This, no doubt, explains why employers, in their answers, have emphasized the need for general or foundation education.

* Bulletin No. 22, *Retail Selling*, Federal Board for Vocational Education, Washington, D. C.

† There are 1,500 retail stores of all kinds in Charleston.

The employers are not alone conscious of this situation. Employees, in their replies, have expressed a greater desire for foundation training and general business subjects than for any other. (See Table No. 11, page 105.) The next greater demand is for salesmanship and advertising courses. This is proof of the fact that after boys and girls have left the public schools and found employment, they, in this employment, discover their outstanding deficiencies and seek to remedy them. The fact that more than twenty States have established a compulsory educational law which seeks to give such boys and girls an opportunity for job improvement, shows that the American people deem it a highest obligation to give youth, which has been obliged for different causes prematurely to quit school, further educational opportunities.

Charleston, as a cross section of American business life, has the same situation and must seek a remedy for it. This remedy may be provided in two ways:

(a) To introduce those courses of study into the public schools which business needs indicate will prove of greatest benefit, as retail

The Remedy salesmanship, advertising and business organization and procedure.

(b) To provide continuation school courses for men and women who are now on the job.

It would seem advisable first to introduce continuation school courses in evening classes, and later on there may be worked out a co-operative plan between the public school authorities and business men to provide day school classes.

It is fortunate that when we seek to provide that kind and quality of instruction which is best for the economic and promotional welfare of the individual, we, at the same time, advance the economic welfare of the firms in which these individuals are employed. Of even more importance, when we advance the welfare of the individual and the business firm, we advance the welfare of the community in general.

Inquiry was made of the business men as to whether or not they experience difficulty in obtaining competent stenographers. Thirty-four of the business firms stated that they do have this difficulty; thirty-six that

Supply of Competent Stenographers they do not. (It is possible that the thirty-four firms tend to relieve the needs of the other thirty-six in that they provide beginning stenographers the necessary experience.)

Of the 975 commercial employees who were reported in the questionnaire, 11.6% are rated as stenographers. Of these 88.2% are women. These figures are shown in Table No. 1, page 99, and Diagram No. 1. The survey data shows conclusively that the position of stenographer and the related positions of typist and file clerks are almost exclusively filled by women. On the other hand, there are a few firms who desire only men stenographers. Frequently these positions are of a secretarial nature. It is usually advisable for the high school boy to take the stenographic course only when he has a fairly good notion of where he will find employment, because of the fact that the number of such opportunities for male stenographers is limited.

In the training of stenographers, it is important to keep in mind those types

of office work which a stenographer has to do in connection with the stenographic work. There are relatively few positions in Charleston which call for only straight stenographic work. Table

Stenographic Work No. 14, page 107, shows the combination positions reported and kinds of business in which they are found. As we naturally would expect, stenography and filing is the most

frequency combination. Stenography and billing comes next, and in the third place, stenography and general office work, including that of mail clerk. In only one case do we have reported the combination of stenography and bookkeeping. It seems safe to assume that the combination of stenography and general office work most likely does not include the work of bookkeeper, since employees, in reporting their duties, tend to report bookkeeping as such.

The fact that in Charleston, stenography and bookkeeping is almost invariably not a combination position reflects the same situation which has been found true in other cities.* This is a vital consideration

The Stenographer and the Bookkeeper not a Combination Position for the public schools, inasmuch as the commercial curriculum has been principally made up of both stenography and bookkeeping and practically all students who enroll pursue the combination training. The survey data shows conclusively that Charleston boys should usually be trained for one group of positions, such as general clerk, stock clerk, bookkeeper, and the girls trained for another group of positions, such as file clerk, typist, and stenographer. These two

groups of positions call for separate and different courses of study in the training of boys and girls. It happens that the City of Charleston is fortunate in being able, with a minimum amount of readjustment, to provide these different lines of training since there is a girls' high school and a boys' high school.

The business firms report that stenographers are usually deficient in the following ways:

- (a) Lack of knowledge in spelling, punctuation and grammar.
- (b) Lack of knowledge of business correspondence.
- (c) Lack of knowledge of office practice as in filing, handling of mail and use of telephone.

These replies in short indicate that what is needed is, first, general education, and second, special business training. A study of the business education of these stenographers reveals that the prevailing length of training has been from three to six months. It would seem that stenographers have tended to acquire in school only the technique of the subject with a smattering of its principles, and leave to the job experience a rounding out of their training. This situation is bad and costly, and every effort should be made by both school authorities and business men to prevent this loose, haphazard tendency. The acquirement of the mere technique of shorthand is a relatively simple undertaking. It is when this technique must be applied to business procedure that the ability and previous training of the employee is taxed. Stenography

* Cleveland Education Survey, Boys and Girls in Commercial Work, p. 38, Russell Sage Foundation, New York City.

is merely a time-saving instrument in the use and application of general education to the needs of the office. In other words, stenography is a special kind of knowledge whose principal function is the expression and application of general kinds of knowledge. It tests and taxes general education as no other specialized business training does. Therefore, in the training of a competent supply of stenographers, it is essential that students be required to obtain as thorough and complete general education as possible, and build upon that foundation the stenographic training. Furthermore, Charleston business men declare that business demands will be best met when the minimum age requirement is 18, and general education, high school. Without these two fundamental conditions met, the employee will, in most cases, tend to become, not a vital, thinking, constructive force in the office, but rather a routine clerk. Her duties will tend to be those of typist, mail clerk, and file clerk, simply because the head of the business cannot trust her to take the important dictation of the firm. Furthermore, she will tend to remain in the clerical capacity for the very reason that her chief deficiencies will be general education, and this is something which cannot be easily acquired on the job. The job is the place where knowledge is to be applied. In this case, the employee has inadequate knowledge to apply. There is practically only one way out, and that is for her to seek job improvement by enrolling in continuation school classes.

A study of Table No. 15, page 108, shows that business men are paying stenographers good salaries. Frequently the salary paid is inconsistent with the quality of service rendered, simply because the scarcity of stenographers has created an unusual situation. The point of importance is that well-trained high school girls can expect a good salary in this line of work, and the tendency of business is to increase the amount of salary in proportion to the quality of service rendered. Getting a job is relatively an

Salary easy matter. Holding a job, and improving on it, is a far more difficult thing, because this is the reward of efficiency and praiseworthy service. High school girls trained in stenography invariably endure in that line of employment. Girls with less than high school training, and therefore with inadequate foundation education, tend to get jobs in this line of work, but usually they do not endure and soon are found doing other things. Table No. 7, page 104, shows that a number of girls reported that they had business training in stenography and yet their present positions are not stenography. The one class is prepared to survive the requirements of business; the other class is not. This very point presents one of the basic faults of education. Schools too often have visionary, impracticable knowledge of the requirements of the positions for which they

The Training Should Fit the Job permit boys and girls to be trained. The training does not fit the job, and the job does not fit the individual. It is a commendable trait of youth to aim high, and in its very aspirations, to lose sight of its practical limitations. Schools, parents and business men commit a serious wrong to these individuals when they do not apply their experience to the inexperience of boys and girls in seeing that their business job objective is feasible and in thorough, practical keeping with both the possibilities and ambitions of the individual.

That fact that in Table No. 15 we find that Charleston business men pay as good salaries to persons with grammar school education as those with

high school education is probably explained by the lack of a sufficient number of stenographers to meet the demand. It would seem that this unnatural situation is a result of the war-time demand. We may well expect that this abnormal situation will rapidly tend to correct itself with the result that well-trained high school stenographers will receive salaries commensurate with their superior general and special education. They may at the outset receive salaries of practically the same amount as the grammar school graduates, but their additional strength will enable them to grow out of that position in line of promotion with greater certainty and rapidity in becoming real, contributing, efficient factors in the success of business houses.

Supply of Competent Bookkeepers Do Charleston business firms have difficulty in obtaining competent bookkeepers? Thirty-one say that they have; thirty-five that they have not. In what ways do they find bookkeepers generally deficient? Their comments may be summed up as follows:

- (a) Lack of interest and initiative.
- (b) Lack of practical training.
- (c) Lack of thorough training.
- (d) Lack of mathematical accuracy.
- (e) Lack of foundation training in elementary subjects.
- (f) Lack of ability to write legibly and rapidly.

Very frequently a lack of interest and initiative in a position reflects a lack of appreciation of the purpose and importance of the work, and the way it fits into the organization and procedure of the business as a whole. Bookkeeping instruction in schools too frequently has been in terms of teaching the student how to keep a complete set of books instead of giving him an adequate knowledge of the various specialized forms of bookkeeping. The result is that when the prospective bookkeeper finds employment and is not placed in charge of a complete set of books, but doing a specialized work as that of ledger clerk, entry clerk or cost clerk, he loses his sense of equilibrium and proportion. He does not have a clean-cut notion of how his specialized work fits in with the system of bookkeeping as a whole. Without this kind of knowledge, he tends to become more and more an automaton—an unthinking, mechanical device. It is little wonder that he should lack interest and initiative. On the other hand, the one who has an intelligent understanding of his job, usually shows interest in that job. He not only knows the nature of his present duties, but he understands how those duties fit in with the bookkeeping work as a whole and particularly how they relate themselves to the job immediately ahead of his in line of promotion. This knowledge fires ambition, and ambition fires keen interest and initiative.

Bookkeeping practice in Charleston, as in other cities, is being rapidly specialized.* Accordingly, extreme care must be exercised by the public schools that they conform to the changing business requirements.

Need for Specialization Both employees and employers emphasized the need for bookkeeping to be taught in terms of its specialized forms. In this connection, it is essential that fundamental principles

* Cleveland Education Survey, Boys and Girls in Commercial Work, pp. 36-38, Russell Sage Foundation, New York City.

of the subject be taught rather than systems in the practice of the subject. The system varies with the firm, but principles remain constant with all firms.

Bookkeeping machines are more and more coming in vogue in the City. Mechanical devices in the handling and recording of business transactions are becoming the rule. Numerous business men expressed

Use of Machines. the belief that this phase of bookkeeping instruction must be given proper attention in the training of adequate, effective help. Among the 975 employees who were reported,

9.4% are cost clerks, ledger clerks, bookkeepers and head bookkeepers. Of this number, 17.6% are bookkeeping machine operators. This reflects two leading tendencies among business men in the matter of bookkeeping practice:

- (a) To specialize bookkeeping work as entry clerk, ledger clerk, cost clerk.
- (b) To do as much of the recording as possible with machines.

The elementary bookkeeping instruction offered in the first years of high school, should be so organized and arranged that the student will get that knowledge which is required not only as preparation for advanced work in the subject but also as preparation for initial bookkeeping jobs, such as entry or ledger clerk. This practice will take care of the student who, for any reason, must leave high school and seek a position. This practice will also

more effectively serve the interests of the student who is fortunate enough to be able to remain in school and advance in the study of the subject. The natural order of promotion in bookkeeping is from entry clerk or ledger clerk, to assistant bookkeeper, to head bookkeeper, and to professional accountant. The plan of instruction at all times should be: (1) to train the student for the initial job, and (2) to advance that training in terms of the requirements of the

Training for the Future as well as for the Immediate Present positions which are ahead in the natural order of promotion. The responsibility in this matter is not only that of the school; it is equally that of the employer. The employer who best seeks to increase the efficiency of his personnel will be the one who is willing to establish a definite order of promotion among his bookkeeping force. This makes it possible for the beginner to know the road of endeavor along which he may advance, and will enable the school to train boys and girls to best advantage in preparing them for the initial jobs, and in line of promotion beyond them.

Business concerns suggest the following ways in which, in their experience, bookkeeping instruction has not been most useful.

- (a) Lack of emphasis on loose leaf system.
- (b) Lack of emphasis on specialized forms of bookkeeping practice.
- (c) Lack of attention to arithmetical speed and accuracy.
- (d) Lack of practice in teaching bookkeeping in terms of actual bookkeeping problems as found in the different types of business in Charleston.

Supply of Dictating Machine Operators Inquiry was made as to whether or not dictating machines are generally used in Charleston. The replies show that only seven of seventy-seven firms use them. As to difficulty in obtaining trained operators, three of the seven said they had difficulty, two that they had not, and two left the question unanswered.

The fact that very few concerns use dictating machines means that there

is not enough demand, at present, to justify school authorities in making provision for this kind of employment.

In the employers' questionnaire, the question was raised as to whether or not a knowledge of typewriting should be had not only by stenographers and typists but by messengers and other junior help about an office. That is, does typewriting have a general utility value among lower office positions? Is it a knowledge that would enable the messenger boy to advance into a better office position by reason of the fact that in the handling of typewriting work, he would, in a sense, be going through a course of training and development in his business possibilities?

A large majority of the business men indicated in their replies that typewriting had this general utility value both to the work of the office and to

General Value of Typewriting the messenger or other junior help in fitting him into the business organization to better advantage and thus winning promotion. Messenger boys usually include those who have had to quit school in the grammar grades or the first or second years of high school. If boys (and girls) can be offered instruction in typewriting in the eighth and ninth grades, it would result in those who must leave school having a knowledge which would more effectively introduce them into larger offices. The fact that messenger boys usually immediately acquire a knowledge of the subject after they obtain employment is a proof that the value of this subject is of first importance in doing present duties as well as future duties. It is true that along with this they will, in most cases, need to avail themselves of continuation school classes in order to correct their lack of thorough and adequate general education. For example, their typewriting work might lead them, on the one hand, in line of promotion to the work of billing clerk, from that to entry or ledger clerk, and from that to assistant bookkeeper and head bookkeeper. On the other hand, it might lead them to full-time duties as typist, then to stenographer, and then to private secretary. Our experience in the junior high school has taught us that typewriting is a subject that can easily be acquired by seventh, eighth and ninth grade students. Furthermore, a knowledge of this subject is an advantage to the commercial student who can go through high school. Typewriting is one of our most effective subjects in vocationalizing school training of younger students. Its possibilities in opening up an approach to business are potent, and school authorities and business men should seek to make the most of it.

Another question asked in the employer's questionnaire was whether or not it is thought advisable to train prospective employees in the use of the office appliances, such as adding machines, calculating machines, bookkeeping machines, and filing devices. Ninety-five per cent of the business men said yes. This is a strong appeal to the public schools to meet this need. The relative feasibility of offering instruction in these devices, in terms of degree of business demand, would seem to be as follows, from the most important to the least important:

- (a) Filing devices.
- (b) Adding machines.
- (c) Calculating machines.
- (d) Bookkeeping machines.

Bookkeeping machines are principally found in the banks where practically all bookkeeping work is done on machines.

Employers were asked to indicate from what sources of supply they obtained their employees. The sources and the number making use of each are as follows:

Sources of Supply from Which Employees are Obtained	Newspaper advertisements	50
	Applying to private business schools.....	17
	Applying to other schools.....	10
	Through private sources.....	6
	Employment agencies	4
	By written applications.....	3
	Employment secretaries	2
	Applying to public schools.....	0

In addition to the above, all of the firms obtain employees through personal interviews.

From the public school standpoint, the thing which the above information emphasizes is the fact that no business concern has been in the habit of applying to public schools for trained employees when at the same time, both the Memminger High School and the Charleston High School offer commercial courses which train girls and boys for employment in stenography, typewriting, bookkeeping and general office work.

As commercial training grows in importance in the public schools, it would seem that there should develop on the part of business men a practice to make direct application to the public school authorities for such kinds of help as they train. If high school boys and girls are to be more and more encouraged to enroll in courses which will train them for specific positions,

such as salesperson, bookkeeper, and stenographer, the business men, at the same time, should give these boys and girls an opportunity for placement. It would seem as much a part of practical business procedure for employers to make inquiry of public schools for help as they are in the habit of making inquiry of private business colleges. This practice will enable the public school authorities to have an opportunity to select that student, if any, who is best fitted for the specific position which is open. A plan of co-operation between the business concerns and the public school authorities in facilitating effective placement is urgently recommended.

Tables Nos. 15-27, pages 108-112, inclusive, present schedules of representative salaries which are being paid in such positions as stenographer, typist, cashier, stock clerk, general clerk, billing clerk, salesperson, and bookkeeper. In connection with the schedule of salaries paid, are stated the minimum age, education, and experience requirements.

It is noted that the prevailing range of salaries paid stenographers is from \$75 to \$100. The prevailing minimum age requirement is 18; average education requirement, high school; and experience requirement, none. There are of course exceptions to these prevailing requirements. One firm, for instance, requires a minimum age of 22 years, college education, and six months' experience, paying for this kind of help \$83 to \$125. Another firm makes 18 the minimum age requirement; education, grammar school; and experience,

none; paying for this kind of help \$100 to \$125. This extreme variation would seem to indicate that there is no standard among business men in respect to these requirements. It seems to be more a question of the immediate business need and of ability to take dictation and transcribe with accuracy and speed.

Better Education Essential for Advancement It is obvious that the advantage of greater maturity and better education is not so essential merely in obtaining a stenographic position as in offering a superior chance for promotion out of the initial job into something better. A study of the employees' questionnaires verified this statement. Those of limited education have naturally tended to stay in the initial position.

The exception has been in cases where splendid native ability has offset the other handicaps. High school boys and girls must not forget that the lure of salary of the initial position is by no means a safe counsel as to possibilities ahead. The opportunity and not the salary is the thing that should always first concern those who are to begin a business career.

In regard to the position of bookkeeper, there is an extreme variation of age, experience, and general education requirements, as demanded by business concerns. Correspondingly, there exists an extreme variation of salaries paid.

The Bookkeeper In general, however, business men desire greater maturity in their bookkeepers than in their stenographers. It is to be noted that the range of age requirements is from 18 to 21. Furthermore, most concerns desire experienced help who have had at least a high school education. The term bookkeeper, as used here, is intended to include the various recording positions as ledger clerk, cost clerk, entry clerk, bookkeeping machine operator, assistant bookkeeper and head bookkeeper.

We would naturally expect to find in the position of salesperson a considerable variation in business requirements in view of the fact that the organization of such establishments as 5 and 10 cent stores will

The Salesperson permit younger employees with correspondingly lower education. Of the twenty firms whose report is included in

Table No. 23, we find eight giving grammar school as the minimum education requirement; and of these four giving sixteen years as the minimum age desired. The fact that only four have stated the minimum age as sixteen, but most of them have declared that the age should not be less than 18, shows that in this position also, maturity is an essential asset. With such a considerable variation existing, we can quickly understand that there is a correspondingly wide range of salaries paid, the extreme variation being \$32 to \$220. The factor of experience, as a rule, enters into the higher salaries paid.

In the consideration of all these schedules, the one outstanding feature is the fact that as business becomes more and more specialized and professional in its nature, the age, education, and experience standards tend to be raised higher and higher. It is striking to note in the tables how widespread is the demand for at least high school graduates. A few concerns even insist on college graduation. The vital factor, however, is not so much in being a

Demand for the Trained high school graduate, as having had that general and specific training which is closely related to business experience and functions as job preparation for the specific duties which will be required of high school students when they obtain

employment. It should be emphasized again that if business men are able to engage employees who possess the kind of requirements that present business conditions demand, this result must come more from the united and earnest efforts of employers, public school authorities and parents than from those of the boys and girls, for the reason that the latter lack that fund of practical experience which enables them properly to appreciate how seriously they are crippled in the pursuit of business careers if they are lacking in maturity and at least high school education. What they need, above all other things, is that inspirational and effective environment thrown about them which will lead them to accept the minimum requirements which the best interests of business demand.

Subjects which Business Men Suggest Should be Emphasized in the Training of Prospective Employees

The business men were asked if they thought the fundamental principles of advertising, salesmanship and business organization and procedure should be taught as part of the business training to those who show ambition and satisfactory promise for the position of retail salesperson. We have already noted that there is a much larger group of boys and girls who enter business as retail salespeople than any other position. The business men were practically unanimous in the opinion that these subjects should be taught in the public schools.

They were also asked to suggest other subjects which should be taught. Their suggestions may be grouped as follows:

- (a) Commercial law.
- (b) Banking practice and procedure.
- (c) Operation and care of office mechanical devices.
- (d) Mathematical short-cuts.
- (e) Instruction in filing.

Some of these subjects are already taught in the public schools and are here listed with the other subjects in order to show the dominant types of training which business men feel are at present most needed.

Employers also were asked where they thought increased emphasis should be placed in the training of those who come into their employment. Their replies may be summed up as follows:

- (a) Greater and more thorough general education, as in English, arithmetic, place geography, spelling, punctuation, and penmanship.
- (b) Development of the habit of industry and willingness to work.
- (c) Development of habits of reliability, courtesy, patience, accuracy, neatness, dispatch and punctuality.
- (d) Inculcation of the habit of studying the job in which employed.

To utilize as far as possible the practical suggestions and experience of business men, it is suggested that an educational committee of representative business men be appointed by the Chamber of Commerce to co-operate with the public school authorities in shaping business courses of training into that

form which will best serve the interests of business and of

Advisory Committee

those boys and girls who are to participate in business. The center of thought, at all times, in working out any plan, must be the boys and girls. Thus business concerns will not only have done their fullest duty toward the personal development and advancement of those boys and girls, but will at the same time have bettered

their own economic welfare. Business, as much as the public school, is a great training center for boys and girls. Every boy and girl who seeks preparation for a business position must always obtain training in two places: (1) in school, and (2) on the job. There are types of training which can best be acquired in school. There are other types of training which can best be, and frequently, only, acquired on the job. This calls for closest co-operation between school authorities and business men. This co-operation, for example, has been satisfactorily worked out in many cities in improving the training of those who seek improvement in retail selling.

When this co-operation has been put into effective operation, at once there also will be brought about a substantial improvement in those deficiencies which are now so frequently found in the training of employees. Indeed these deficiencies will never be effectively remedied until this co-operation comes, because it will mean the necessary supplementing of business practice with school training. The experiences of the one must forever weight, test and shape the experiences of the other.

Charleston is rapidly developing as one of the principal ports of the country. There are at present nine steamship lines which are doing business

at this port. Its list of exports and imports is fast increasing. Its port facilities are being constantly improved and enlarged. The survey, however, did not disclose very much demand at present for employees who are specially trained by public schools in foreign trade service, but unquestionably as the development of the port advances this demand will come. When it does come the public schools should be prepared to co-operate with the foreign trade interests by providing those courses of study which will help to supply adequately trained help for service both at home and abroad. There have been worked out in detail courses of study designed for this purpose.* The teaching of these subjects in public schools has advanced beyond the experimental stage to the point where successful experience in numerous centers of this country has proven beyond a doubt the practicability of this work. The chief difficulty is to obtain teachers who are sufficiently well trained in the practice, theory and pedagogy of these subjects.

SUMMARY OF FINDINGS

1. More Charleston boys and girls, upon leaving school, find employment in the position as retail salesperson than in any other position.
2. Bookkeeper and stenographer are two lesser important commercial callings among a long list of such opportunities.
3. Bookkeeper and stenographer, in both small and large concerns, are rarely found in combination, but are almost invariably separate positions.
4. Boys and girls usually find employment in different kinds of positions: boys in such callings as general clerk, shipping clerk, receiving clerk, stock clerk, billing clerk, and bookkeeper; girls in such opportunities as stenographer, file clerk, and typist.
5. Younger workers (those under seventeen years of age) as a rule find employment only in specialized retail stores. They are rarely found in such

* Miscellaneous Series, 97—Training for Foreign Trade, U. S. Bureau of Foreign and Domestic Commerce, Washington, D. C.

positions as stock clerk, receiving clerk, shipping clerk, store cashier, stenographer, typist, and bookkeeper, because maturity and at least a good general education, preferably high school, are demanded in these positions by business needs.

6. Almost 50% of employees have had partial or complete high school education.

7. Only 30.3% of employees have had any business training in school. Of those who attended the public schools, 35.5% were enrolled in business courses one year and less. Of those who attended private business colleges, 75.1% pursued business training six months and less.

8. A large proportion of employees in such positions as general clerks, cashiers, file clerks, and bookkeepers have had no special business training in school.

9. No salesperson reports having had any business school preparation in his line of work.

10. Boys and girls are frequently trained in one line of work, as stenography, and find employment in another wholly unrelated line, as salesperson.

11. 52.7% of employees of all ages have been in continuous service of their firms one year or less. Of those under twenty-six years of age, 69.8% one year or less.

12. Labor turnover of all kinds of business, during the twelve months preceding May 1, 1920, was 74%; of retail stores as a whole, 111.5%; of 5 and 10 cent stores, 443.8%.

13. One principal reason for the heavy labor turnover, is the fact that at least 60.8% of business concerns have no definite promotional plan for their employees.

14. Another reason for the heavy labor turnover is the fact that very few business firms have made any provision for a systematic plan of instruction and supervision of those who enter their employment. New employees are left to "break in" on the job as best they can in an uncertain, haphazard way.

15. Business concerns as a rule encourage their employees to enroll in school courses of study leading to job improvement; and if school work is satisfactorily done, offer promotion.

16. Almost 75% of employees have never attended either evening or day school business classes while employed in present or previous positions.

17. The continuation school subjects which are most wanted by employees are business arithmetic, spelling, business English, salesmanship and advertising, bookkeeping and stenography. (By "continuation school" is meant any school in which a person continues education while remaining at employment.)

18. There exists an inadequate supply of properly trained and competent salespeople, bookkeepers, and stenographers.

19. Salespeople are generally deficient in spelling, penmanship, grammar, arithmetic, interest in work, initiative, knowledge of the simpler business forms, and general office or store procedure.

20. Of retail salespeople under twenty-six years of age, 81.4% are women. Retail selling, however, is also an important commercial calling for men in certain lines of business in which they predominate, as in shoe store, hardware store, drug store, clothing store.

21. Most younger female commercial employees (those under seventeen years of age) are engaged in retail selling positions.
22. Ninety per cent of stenographers are women.
23. Few straight stenographic positions are found in Charleston, but usually stenography is combined with such work as filing, billing, and handling mail.
24. Age eighteen and high school education are minimum requirements which best business interests demand of stenographers.
25. Stenographers are generally deficient in spelling, punctuation, business English, letter writing, filing, handling of mail, and use of telephone.
26. Prevailing length of business training of stenographers has been from three to six months. Competent and satisfactory stenographers cannot usually be trained in that time.
27. Bookkeepers generally lack interest in work, initiative, mathematical speed and accuracy, ability to write legibly and rapidly, knowledge of specialized forms of bookkeeping practice, and training in solution of practical, everyday bookkeeping problems.
28. Practically no demand exists for dictating machine operators, as very few business concerns use the machines.
29. It is important that messengers and junior helpers about an office be trained to operate a typewriter. This knowledge increases the value of their services as well as enhances their chances of promotion.
30. Ninety-five per cent of business believe that the public schools should provide instruction in operation and care of office appliances, such as adding machines, calculating machines, bookkeeping machines, and filing devices.
31. Employees are chiefly obtained by newspaper advertisements, personal interviews, and applying to private schools. No business firm is in the habit of applying to the public schools for trained store or office help.
32. Business men suggest that business training of prospective employees should emphasize commercial law, operation and care of office mechanical appliances, mathematical short-cuts, instruction in filing, fundamental principles of salesmanship and advertising, business organization and procedure, place geography, spelling, punctuation, penmanship, business English and inculcation of habits of industry, reliability, courtesy, patience, accuracy, neatness, dispatch, punctuality, and study of job in which employed.
33. There are two kinds of training, that in school and that on the "job." In most cases, both kinds must be had before prospective employees are adequately trained. An example is preparation of competent retail salespeople. This calls for closest co-operation between school authorities and business men so that retail selling preparation begun in school may be completed on the job. This is as much the responsibility of Charleston business men on behalf of Charleston boys and girls as it is that of the public school authorities.
34. There is very little demand at present for the public schools to provide foreign trade training facilities, but unquestionably as the development of the port advances this demand will come.

RECOMMENDATIONS

1. The fact that more Charleston boys and girls are employed in the position of retail salesperson than in any other position means that the public

schools should make provision for training prospective employees for this line of business. Business men are practically unanimous in this opinion. Furthermore, classes in retail selling, advertising, business organization and procedure should be offered in an evening school for those in employment who desire such courses.*

2. It is recommended that the Chamber of Commerce appoint an educational committee to co-operate with the public school authorities in working out a plan whereby high school students may have an opportunity to have "contact with the job" in the third and fourth years of the retail selling course and in the fourth year only of the other courses, such as stenography and bookkeeping.†

3. High school students as a rule should not be given combination training in bookkeeping and stenography since the positions of bookkeeper and stenographer, in both small and large concerns, are rarely found together but are almost invariably separate and distinct jobs.

4. Relatively few straight stenographic positions exist in Charleston. The work of stenographer is usually in combination with that of filing, handling of mail, and billing. Provision, therefore, should be made in the preparation of stenographers for instruction in these combination duties, if such has not been done.

5. High school business courses of study should be organized and taught in terms of the actual duties and requirements of the immediate positions for which students are being trained and of the promotional positions into which they should advance. This demands a job analysis of each position and knowledge of the line of promotion for each position.‡

6. High school business courses of study should be organized on the unit plan, whereby the first year will not only prepare the student for the second year's work but, if he must leave school at the close of the term, prepare him for certain types of business positions.§

7. It is urged that parents, employers and public school authorities make every effort to induce students to remain in business courses long enough to be thoroughly trained. The fact that 35.5% of those in business who enroll in public school classes remain one year and less than 75.1% of those in private business colleges six months and less presents a serious situation and needs every attention to correct it.

8. Greatest care should be exercised in seeing that boys and girls are not

* Detailed information in organization of retail selling classes is given in Bulletin No. 22, Commercial Education Series No. 1, Retail Selling, Federal Board for Vocational Education, Washington, D. C.

† See Bulletin No. 34, Commercial Series No. 3, Commercial Education; Organization and Administration, pages 23 to 31, inclusive, Federal Board for Vocational Education, Washington, D. C.

‡ See Survey of Junior Commercial Occupations, Part III, Federal Board for Vocational Education, Washington, D. C.

§ See Bulletin No. 34, Commercial Series No. 3, Commercial Education; Organization and Administration, page 16, Federal Board for Vocational Education, Washington, D. C. Also Bulletin, 1919, No. 55, Business Education in Secondary Schools, pages 21 to 23, inclusive, U. S. Bureau of Education, Washington, D. C.

trained in one line of work and find employment in another wholly unrelated line. A definite job objective should be determined by the student as early as possible in his school training, upper grade or high school, in order that he may pursue his course with proper purpose, interest and full consciousness of his specific job needs. The training of boys and girls for specific, immediate, initial business jobs should tend to correct the present heavy labor turnover, which exists in all kinds of business. The person trained for a specific job will tend to "stick" to the job.

9. The fact that 75% of employees have never attended either evening or day school business courses while employed in present or previous positions, and that of this number a large percentage have expressed a desire for such an opportunity, offers the public school authorities an opportunity to provide continuation school facilities of the most helpful kind to these employees. The organization of job improvement courses of study for these workers should be done in co-operation with the educational committee appointed by the Chamber of Commerce. Charleston business men have expressed practically a unanimous desire to encourage their employees to enroll in such classes.*

10. Every effort should be made as far as possible to correct those shortcomings in general academic and business subjects, such as spelling, grammar, business correspondence, punctuation, arithmetic, penmanship, place geography, which business men have stated are most frequently found among their employees.

11. As soon as practicable, the public school authorities should make provision for courses in the preparation of foreign trade personnel.†

12. It is important that instruction in bookkeeping and in operation and care of office appliances be made to conform with business requirements. As much as possible bookkeeping problems should be actual Charleston business problems. The business men will be glad to furnish type problems in this and other important commercial subjects. This could well be one of the chief duties of the Chamber of Commerce educational committee which it is recommended should be appointed to co-operate with the public school authorities.

13. The high school commercial curriculum should provide training for the major business callings of the community in which boys and girls find employment. This means that training must not be restricted to preparation of stenographers and bookkeepers but broadened as far as practicable to cover other even more important commercial callings as that of retail salesperson. While accomplishing this result, the training must also provide proper physical education, ability to discharge the obligations of citizenship, and an appreciation of the fine arts.‡

* See Bulletin No. 34, Commercial Series No. 3, Commercial Education; Organization and Administration, pages 33 to 49, inclusive, Federal Board for Vocational Education, Washington, D. C.; also Survey of Commercial Occupation, Federal Board for Vocational Education, Washington, D. C.

† Detailed information given in Miscellaneous Series No. 97, Training for Foreign Trade, Bureau of Foreign and Domestic Commerce, U. S. Department of Commerce, Washington, D. C.

‡ Bulletin, 1919, No. 55, Business Education in Secondary Schools, U. S. Bureau of Education, Washington, D. C., pp. 20-23 and Part II.

Table No. 1

DISTRIBUTION OF EMPLOYEES OF ALL AGES AMONG COMMERCIAL POSITIONS AS REPORTED BY 82 EMPLOYERS

POSITION	Men	Women	Total
1. Messenger	26		26
2. General Clerk*	81	22	103
3. Shipping Clerk	36	2	38
4. Receiving Clerk	16	2	18
5. Stock Clerk	29	2	31
6. Salesperson (Retail)	128	150	278
7. Salesperson (Wholesale)†	23	1	24
8. Retail Store Department Heads†	6	3	9
9. Stenographer	11	102	113
10. Typist	4	19	23
11. File Clerk	3	13	16
12. Mail Clerk	9	8	17
13. Billing Clerk	18	7	25
14. Bookkeeper	58	18	76
15. Cashier‡	29	25	54
16. Cost Clerk	1		1
17. Entry Clerk	2	4	6
18. Ledger Clerk	7	1	8
19. Bookkeeping Machine Operator	11	5	16
20. Addressograph Operator	1	5	6
21. Calculating Machine Operator	4	2	6
22. Dictaphone Operator	2	4	6
23. Switchboard Operator		3	3
24. Bank Tellers	9	5	14
25. R. R. Rate and Claim Clerks	8		8
26. Timekeeper	5	5	10
27. Bundle Wrapper	6		6
28. Delivery Wagon Driver	34		34
Totals	567	408	975

*Includes both general store and general office helper.

†Only a few firms reported for these positions.

‡Store Cashiers

Table No. 2

DISTRIBUTION OF MEN AND WOMEN UNDER 26 YEARS OF AGE IN TERMS
OF AGE AND POSITION AS REPORTED BY EMPLOYEES

Table No. 3

DISTRIBUTION OF EMPLOYEES, UNDER 26 YEARS OF AGE, AMONG COMMERCIAL POSITIONS AS REPORTED BY EMPLOYERS

POSITION	Men	Women	Total
1. Messenger	22	.....	22
2. General Clerk	26	11	37
3. Shipping Clerk	8	.....	8
4. Receiving Clerk	4	.....	4
5. Stock Clerk	20	1	21
6. Salesperson (Retail)	23	101	124
7. Salesperson (Wholesale) .....	.....	.....	.....
8. Retail Store Department Heads.....	.....	.....	.....
9. Stenographer	4	48	52
10. Typist	4	17	21
11. File Clerk	2	7	9
12. Mail Clerk	3	6	9
13. Billing Clerk	4	7	11
14. Bookkeeper	16	6	22
15. Cashier	6	23	29
16. Cost Clerk .....	.....	.....	.....
17. Entry Clerk	2	1	3
18. Ledger Clerk	3	.....	3
19. Bookkeeping Machine Operator.....	8	3	11
20. Addressograph Operator .....	.....	3	3
21. Calculating Machine Operator.....	.....	1	1
22. Dictaphone Operator .....	.....	2	2
23. Switchboard Operator .....	.....	3	3
24. Bank Tellers	2	2	4
25. R. R. Rate and Claim Clerks	3	.....	3
26. Timekeeper	2	3	5
27. Bundle Wrapper	3	.....	3
28. Delivery Wagon Driver.....	10	.....	10
Total.....	175	245	420

Table No. 4

GENERAL EDUCATION OF COMMERCIAL EMPLOYEES

1. *Public Grammar School*—

Third Grade	2
Fourth Grade	7
Fifth Grade	13
Sixth Grade	22
Seventh Grade	95 139

2. *Public High School*—

Eighth Grade	40
Ninth Grade	45
Tenth Grade	50
*Eleventh Grade	12
*Twelfth Grade	76 223

3. *College*4. *Private Schools Below College*5. *Not Classified*

Total..... 461

Table No. 5

BUSINESS SCHOOL EDUCATION OF COMMERCIAL EMPLOYEES

1. PUBLIC HIGH SCHOOL COMMERCIAL COURSE

(a) *Time Enrolled*.*

3 months	2
6 months	5
9 months	4
12 months	1
15 months	1
18 months	7
24 months	4
27 months	1
36 months	4
45 months	1
Not classified	1 31

2. PRIVATE BUSINESS COLLEGE COURSE

(a) *Time Enrolled*.

3 months	42
6 months	30

* In the eleventh grade are included only Memminger High School cases. In the twelfth grade are included all those who completed a part or all of the senior year either in the Memminger High School or the Charleston High School.

* Classified in terms of school months.

9 months	14	
12 months	4	
15 months	1	
18 months	1	
24 months	3	
Not classified	1	96
		—
3. Other Private Schools' Commercial Courses.....		13
4. Number having no Commercial Training.....		321
		—
Total.....		461

Table No. 6

COMMERCIAL EMPLOYEES UNDER 26 YEARS OF AGE WITH
AND WITHOUT BUSINESS SCHOOL EDUCATION

Position	With Training	Without Training	Totals
1. General clerk	7	15	22
2. Cashier	4	8	12
3. Shipping clerk	0	3	3
4. Stock clerk	3	10	13
5. Switchboard operator	1	1	2
6. Bank mail clerk.....	0	1	1
7. Typist	3	1	4
8. Stenographer	27	0	27
9. Bookkeeper	7	5	12
10. Billing clerk	3	4	7
11. Salesperson	0	90	90
12. Bookkeeping machine operator.....	0	1	1
13. Bank collection clerk.....	0	3	3
14. Bank teller	3	2	5
15. Receiving clerk.....	1	0	1
16. Bank discount clerk.....	0	1	1
17. File clerk	0	3	3
	59	148	207
Not classified			23
			—
Grand total			230

Table No. 7

STUDY OF BUSINESS TRAINING RECEIVED IN SCHOOLS WITH
REFERENCE TO KIND OF POSITION IN WHICH
NOW EMPLOYED

<i>Business Training Had—</i>	<i>Position in which Employed—</i>	
1. Stenography	15—Salesperson	7
	Cashier	2
	Switchboard operator.....	1
	Billing clerk	2
	General clerk	1
	Bank teller	1
	Stock clerk	1
		15
2. Bookkeeping	12—Cashier	2
	Salesperson	4
	Stock clerk	2
	General clerk	3
	Receiving clerk	1
		12

Table No. 8

LENGTH OF EMPLOYMENT OF COMMERCIAL EMPLOYEES
IN PRESENT POSITIONS

Period of Employment in Present Position	Number of Employees	Percentage of Total
1 month	54	
2 months	22	
3 months	38	
6 months	47	
9 months	41	
1 year	41	
	— 243	52.7%
1½ years	38	
2 years	33	
	— 71	15.4%
2½ years	21	
3 years	13	
	— 34	7.4%
3½ years	7	
4 years	16	
	— 23	5%
4½ years	8	
5 years and above.....	72	
	— 80	17.3%
Data not given.....	10 10	2.2%
	—	
Total.....	461	100%

Table No. 9

STUDY OF LENGTH OF EMPLOYMENT IN PRESENT POSITIONS
OF MEN EMPLOYEES UNDER TWENTY-SIX YEARS OLD,
AS REPORTED BY EMPLOYEES

1. Percentage employed one year or less.....	71%
2. Percentage employed more than one year, up to and including two years	11%
3. Percentage employed more than two years, up to and including three years	4%
4. Percentage employed more than three years.....	14%
	100%

Table No. 10

STUDY OF LENGTH OF EMPLOYMENT IN PRESENT POSITIONS
OF WOMEN EMPLOYEES UNDER TWENTY-SIX YEARS
OLD, AS REPORTED BY EMPLOYEES

1. Percentage employed one year or less.....	68.5%
2. Percentage employed more than one year up to and including two years	18.5%
3. Percentage employed more than two years up to and including three years	8%
4. Percentage employed more than three years.....	5%
	100%

Table No. 11

CONTINUATION SCHOOL COURSES DESIRED BY EMPLOYEES
WITH REFERENCE TO POSITION HELD

<i>Position Held—</i>	<i>Subject Desired—</i>	
1. Salespeople	(35)—Business arithmetic	23
	Business English	11
	Spelling	10
	Salesmanship	9
	Stenography	1
	Domestic science	2
	Millinery	1
2. Stock clerks	(8)—Salesmanship	4
	Business arithmetic	1
	Foreign trade service.....	1
	*General business course.....	2
3. Bundle wrapper	(1)—Salesmanship	1
4. General clerk	(8)—Stenography	1
	General business course.....	5
	Foreign trade service.....	1

* By "general business" course is meant bookkeeping as the major subject along with the necessary auxiliary subjects as business arithmetic, spelling, penmanship, commercial law, business English.

5. Billing clerk	(2)—Bookkeeping	1
	Stenography	1
6. Shipping clerk	(2)—Rapid calculation.....	1
	*General business course.....	1
7. Stenographers	(6)—Stenography and typewriting.....	2
	Bookkeeping	3
	Secretarial course.....	1
8. Typist	(2)—Stenography	2
9. Bookkeeper	(6)—Accountancy	3
	Mathematics	2
	General business course.....	1
10. Store cashier	(2)—General business course.....	1
	Stenography	1
11. Bank clerk	(1)—Banking	1
12. Bank teller	(3)—Accountancy	1
	Banking	1
	Mathematics	1
13. Bank collector	(1)—Mathematics	1
14. Retail assistant manager....	(2)—*General business course.....	2

Table No. 12

STUDY OF CONTINUATION SCHOOL COURSES DESIRED WITH
REFERENCE TO DEMAND FOR EACH

Subjects Desired	Number desiring these Subjects
Business arithmetic	29 .
Business English	11
Spelling	10
Salesmanship	14
Stenography	8
Secretarial course	1
Domestic science course	1
Millinery	1
Foreign trade service	3
*General business course	16
Accountancy	4
Banking	2

* By "general business" course is meant bookkeeping as the major subject along with the necessary auxiliary subjects as business arithmetic, spelling, penmanship, commercial law, business English.

Table No. 13
AGE DISTRIBUTION OF COMMERCIAL EMPLOYEES

Age	Number	Age	Number
14	1	23	23
15	12	24	10
16	25	25	18
17	21	26-29	58
18	24	30-39	90
19	17	40 and above	57
20	32	Age not given	26
21	24		
22	23	Total	461

Table No. 14

COMBINATION POSITIONS AND KINDS OF BUSINESS
IN WHICH FOUND

1. Stenography and Billing	5
Wholesale	2
Retail	2
Manufacturer	1
2. Stenography and Filing	7
Wholesale	3
Banking	1
Transportation	1
Manufacturer	1
Wholesale and Retail	1
3. Stenography and General Office Work	4
Wholesale	3
Transportation	1
4. Stenography and Invoice Clerk	1
Manufacturer	1
5. Cashier and Bookkeeper	2
Wholesale	1
Retail	1
6. Typewriting and Filing	2
Retail	1
Manufacturer	1
7. Stenographer and Assistant Bookkeeper	1
Retail	1
8. Bookkeeper and Typist	1
Retail	1
Total	23

Table No. 15

STUDY OF RANGE OF SALARIES PAID STENOGRAPHERS
WITH REGARD TO MINIMUM AGE, EDUCATION
AND EXPERIENCE REQUIREMENTS

Firm.	Range of Salaries Paid	Minimum Age Requirement	Minimum Education Requirement	Minimum Experience Requirement
1	60-100	18 years	High School	1-5 years
2	90	18 years	Normal School	1 year
3	75-100	18 years	High School	None
4	70	15 years	High School	None
5	75	18 years	High School	None
6	70	18 years	High School	None
7	75-100	*	*	None
8	90	18 years	High School	None
9	80-100	18 years	High School	None
10	75	18 years	High School	6 Months
11	83-125	22 years	College	6 Months
12	75-100	18 years	High School	Exper.
13	72-100	18 years	Grammar School	None
14	60-80	*	*	None
15	100	*	*	None
16	60-80	18 years	High School	1 year
17	85-110	18 years	High School	None
18	125	*	Grammar School	1 year
19	115	*	Grammar School	None
20	60	21 years	Grammar School	None
21	75-100	18 years	High School	None
22	75-100	18 years	Grammar School	None
23	68-100	*	Grammar School	None
24	125 up	21 years	High School	2 years
25	75-125	*	*	None
26	100-160	*	*	2-3 years
27	50-75	18 years	Grammar School	None
28	110	18 years	High School	1 year
29	100-125	18 years	Grammar School	None
30	100-125	*	*	*
31	83 1/3	*	*	*
32	84	21 years	*	3 Months
33	100-125	18 years	High School	Exper.
34	125	18 years	High School	6 Months
35	115	18 years	High School	Exper.
36	87.50-100	*	Grammar School	None
37	60-100	16 years	*	None

*Not answered.

Table No. 16

STUDY OF RANGE OF SALARIES PAID TYPISTS
WITH REGARD TO MINIMUM AGE, EDUCATION
AND EXPERIENCE REQUIREMENTS

Firm.	Range of Salaries Paid	Minimum Age Requirement	Minimum Education Requirement	Minimum Experience Requirement
1	48-70	18-20 years	High School	6 Mos.-1 Yr.
2	50-100	*	Grammar School	*
3	80-100	18 years	High School	*
4	75-100	18 years	High School	6 Months
5	60-72	18 years	Grammar School	*
6	60-80	*	Grammar School	1 year
7	84	21 years	Grammar School	3 years

*Not answered.

Table No. 17

STUDY OF RANGE OF SALARIES PAID ASSISTANT AND HEAD BOOKKEEPERS
WITH REGARD TO MINIMUM AGE, EDUCATION
AND EXPERIENCE REQUIREMENTS

Firm.	Range of Salaries Paid	Minimum Age Requirement	Minimum Education Requirement	Minimum Experience Requirement
1	147.50	*	Grammar School	*
2	100-200	Male 30 years Female 21 years	High School	5 years
3	200-250	21 years	High School	2 years
4	75-100	18 years	High School	*
5	75	*	Grammar School	*
6	250	*	High School	*
7	75-200	19 years	High School	1 year
8	70	18 years	High School	None
9	100-150	18 years	High School	None
10	120-140	18 years	High School	None
11	80-120	21 years	Grammar School	2 years
12	160	None	*	Exper.
13	250	18 years	High School	Thoro. expr.
14	100-240	18 years	High School	Thoro. expr.
15	166.66 2/3	*	*	*
16	100-125	18 years	High School	*
17	125-150	19 years	High School	1 year
18	150	21 years	Grammar School	1 year
19	166.66	21 years	Grammar School	*
20	80-128	*	Grammar School	Exper.
21	150	23 years	High School	3 years
22	150-200	*	*	*
23	120-200	21 years	High School	3 years
24	150-200	21 years	Grammar School	6 months
25	200	*	College	Well expr.
26	110-160	Male 18 years Female 18 years	Grammar School	1 year
27	250	*	*	*
28	133	21 years	High School	Expr. pref.
29	108-130	*	Grammar School	*
30	80-140	16 years	*	*

*Not answered.

Table No. 18

STUDY OF RANGE OF SALARIES PAID ENTRY CLERKS
WITH REGARD TO MINIMUM AGE, EDUCATION
AND EXPERIENCE REQUIREMENTS

Firm.	Range of Salaries Paid	Minimum Age Requirement	Minimum Education Requirement	Minimum Experience Requirement
1	125	18 years	High School	None
2	72-120	18 years	High School	*
3	60-80	18 years	High School	*
4	100	*	Grammar School	6 months
5	121	18 years	Grammar School	1 year

*Not answered.

Table No. 19

STUDY OF RANGE OF SALARIES PAID LEDGER CLERK
WITH REGARD TO MINIMUM AGE, EDUCATION
AND EXPERIENCE REQUIREMENTS

Firm.	Range of Salaries Paid	Minimum Age Requirement	Minimum Education Requirement	Minimum Experience Requirement
1	80-100	22 years	High School	5 years
2	100	18 years	High School	*
3	100-125	18 years	High School	*
4	150	19 years	High School	Some

*Not answered.

Table No. 20

STUDY OF RANGE OF SALARIES PAID BOOKKEEPING MACHINE OPERATORS
WITH REGARD TO MINIMUM AGE, EDUCATION
AND EXPERIENCE REQUIREMENTS

Firm.	Range of Salaries Paid	Minimum Age Requirement	Minimum Education Requirement	Minimum Experience Requirement
1	90-125	18 years	High School	6 months
2	100	18 years	High School	6 months
3	75-108	18 years	High School	6 months
4	100	18 years	High School	None
5	150	21 years	Grammar School	1 year

Table No. 21

STUDY OF RANGE OF SALARIES PAID STORECASHIERS
WITH REGARD TO MINIMUM AGE, EDUCATION
AND EXPERIENCE REQUIREMENTS

Firm.	Range of Salaries Paid	Minimum Age Requirement	Minimum Education Requirement	Minimum Experience Requirement
1	40-60	18 years	Grammar School	*
2	50-80	20 years	Grammar School	None
3	80-100	*	Grammar School	1 year
4	100	18 years	High School	None
5	40-60	18 years	Grammar School	*
6	144	18 years	High School	*
7	60-200	None	High School	3 months
8	150	18 years	High School	*
9	100-150	18 years	High School	*
10	200	21 years	Grammar School	3 years
11	300	21 years	Grammar School	*
12	60	*	Grammar School	3 months
13	110-165	18 years	Grammar School	Promotion
14	175-250	25 years	High School	1 year
15	150	21 years	High School	1 year
16	99-150	16 years	Grammar School	*
17	40-80	16 years	Grammar School	*
18	44	18 years	High School	*

*Not answered.

Table No. 22

STUDY OF RANGE OF SALARIES PAID BILLING CLERKS
WITH REGARD TO MINIMUM AGE, EDUCATION
AND EXPERIENCE REQUIREMENTS

Firm.	Range of Salaries Paid	Minimum Age Requirement	Minimum Education Requirement	Minimum Experience Requirement
1	40-80	18-21 years	High School	1-2 years
2	89	19 years	High School	1 year
3	120-140	18 years	High School	*
4	76-120	18 years	High School	*
5	125	18 years	High School	*
6	100	18 years	High School	None
7	120-165	18 years	Grammar School	Promotion
8	100	18 years	Grammar School	6 months
9	97-125	*	Grammar School	*

*Not answered.

Table No. 23

STUDY OF RANGE OF SALARIES PAID SALESMEN (RETAIL)
WITH REGARD TO MINIMUM AGE, EDUCATION
AND EXPERIENCE REQUIREMENTS

Firm.	Range of Salaries Paid	Minimum Age Requirement	Minimum Education Requirement	Minimum Experience Requirement
1	Men 147.50 Women 116.67	• •	Grammar School Grammar School	•
2	Men 80-160 Women 48-140	22 years 19 years	Grammar School Grammar School	1-2 years 6 mo. 2 yrs.
3	80-220	18 years	High School	None
4	90-125	•	Grammar School	2 years
5	50-200	16 years	High School	1 year
6	50-140	16 years	High School	None
7	120-175	18 years	High School	•
8	32-60	16 years	Grammar School	None
9	80-200	18 years	High School	•
10	Men 80-180 Women 48-80	18 years 18 years	Grammar School Grammar School	6 months 6 months
11	120-200	None	Pharmaceutical	•
12	40-120	•	•	•
13	150	21 years	Grammar School	2 years
14	120-160	•	Grammar School	•
15	Men 100-180 Women 48-112	• •	• •	6 months 6 months
16	120-160	•	•	•
17	100-150	•	Grammar School	None
18	Men 150 Women 66.67	•	•	•
19	125-250	21 years	High School	6 months
20	Men 40-200 Women 40-80	16 years 16 years	• •	• •

*Not answered.

Table No. 24

STUDY OF RANGE OF SALARIES PAID STOCK CLERKS
WITH REGARD TO MINIMUM AGE, EDUCATION
AND EXPERIENCE REQUIREMENTS

Firm.	Range of Salaries Paid	Minimum Age Requirement	Minimum Education Requirement	Minimum Experience Requirement
1	100-140	21 years	Grammar School	1 year
2	90	•	Normal School	1 year
3	80-100	•	Grammar School	1 year
4	35	18 years	High School	•
5	125	18 years	High School	None
6	125	21 years	Grammar School	2 years

*Not answered.

Table No. 25

STUDY OF RANGE OF SALARIES PAID RECEIVING CLERKS
WITH REGARD TO MINIMUM AGE, EDUCATION
AND EXPERIENCE REQUIREMENTS

Firm.	Range of Salaries Paid	Minimum Age Requirement	Minimum Education Requirement	Minimum Experience Requirement
1	100	18 years	High School	None
2	140	18 years	High School	•
3	72-120	18 years	High School	None
4	80-100	18 years	High School	•
5	125	20 years	High School	•
6	100	18 years	High School	•
7	150	21 years	Grammar School	3 years
8	120-145	18 years	Grammar School	Promotion

Table No. 26

STUDY OF RANGE OF SALARIES PAID SHIPPING CLERKS
WITH REGARD TO MINIMUM AGE, EDUCATION
AND EXPERIENCE REQUIREMENTS

Firm.	Range of Salaries Paid	Minimum Age Requirement	Minimum Education Requirement	Minimum Experience Requirement
1	*	21 years	Grammar School	3 months
2	65	*	Grammar School	None
3	90-125	*	Grammar School	1 year
4	50-150	18 years	High School	1 year
5	100-125	18 years	High School	None
6	140	18 years	High School	*
7	125	18 years	High School	None
8	150	21 years	Grammar School	3 years
9	120-160	*	Grammar School	*
10	125	21 years	High School	2 years
11	100-150	18 years	High School	None
12	100-145	18 years	High School	6 months
13	110-140	18 years	Grammar School	None
14	125	18 years	Grammar School	None

*Not answered.

Table No. 27

STUDY OF RANGE OF SALARIES PAID GENERAL CLERK
WITH REGARD TO MINIMUM AGE, EDUCATION
AND EXPERIENCE REQUIREMENTS

Firm.	Range of Salaries Paid	Minimum Age Requirement	Minimum Education Requirement	Minimum Experience Requirement
1	75-150	*	Grammar School	*
2	100-120	None	Grammar School	*
3	75	15 years	High School	None
4	75-100	18 years	High School	6 months
5	75-150	18 years	High School	None
6	60-200	18 years	High School	None
7	100-160	20 years	High School	3 years
8	165	18 years	High School	High
9	100	*	Grammar School	*

*Not answered.

Table No. 28

LENGTH OF BUSINESS SCHOOL EDUCATION
STENOGRAPHERS HAVE HAD

Length of Training	Number	Length of Training	Number
2 months	5	1 year, 6 months.....	2
3 months	4	2 years	1
4 months	1	3 years	1
5 months	5	4 years	2
6 months	4		
7 months	1	Total.....	27

Table No. 29

CLASSIFICATION OF BUSINESS CONCERN WHO
REPLIED TO QUESTIONNAIRE

1. Retail	35
Drugs	4
Cigars	1
Grocers	2
Furniture	1
Hardware	3
Coal dealers	2
Department stores	5
5 and 10 cent stores.....	3
Dry goods.....	1
Clothiers	2
Shoes	2
Lumber	1
Crockery	1
Music supplies	1
Electrical supplies	2
Optical and kodak supplies.....	1
Feeds and grain.....	1
Stationers	1
Paints	1
2. *Wholesale	20
3. Manufacturers	7
4. Transportation	6
5. Public utilities	1
6. Finance and insurance	11
7. Foreign trade business (cotton exporter).....	1
8. Professional men	6
Lawyers	1
Accountants	1
Architects	3
Engineers	1
Total.....	87

* Five of the wholesale firms are also retail, and have been listed as both.

DIAGRAM No. 1

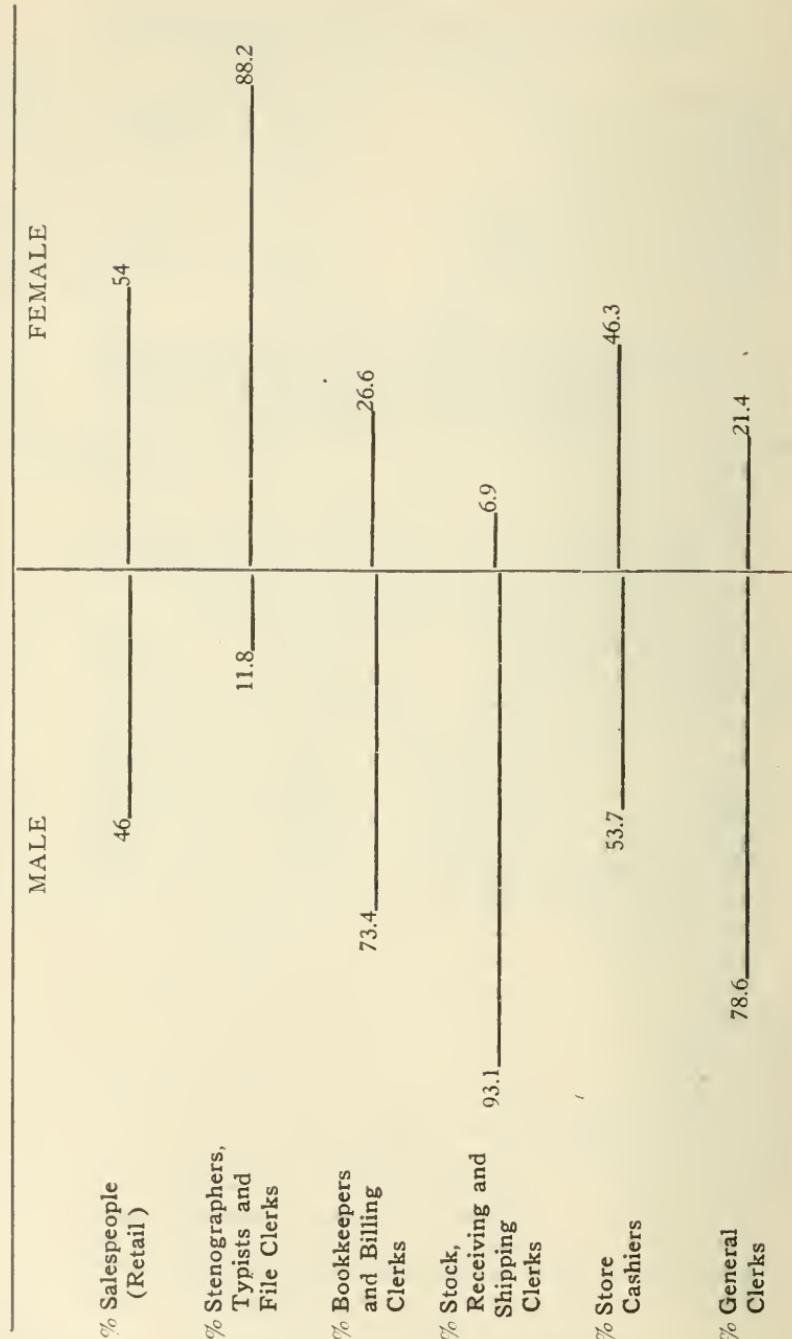
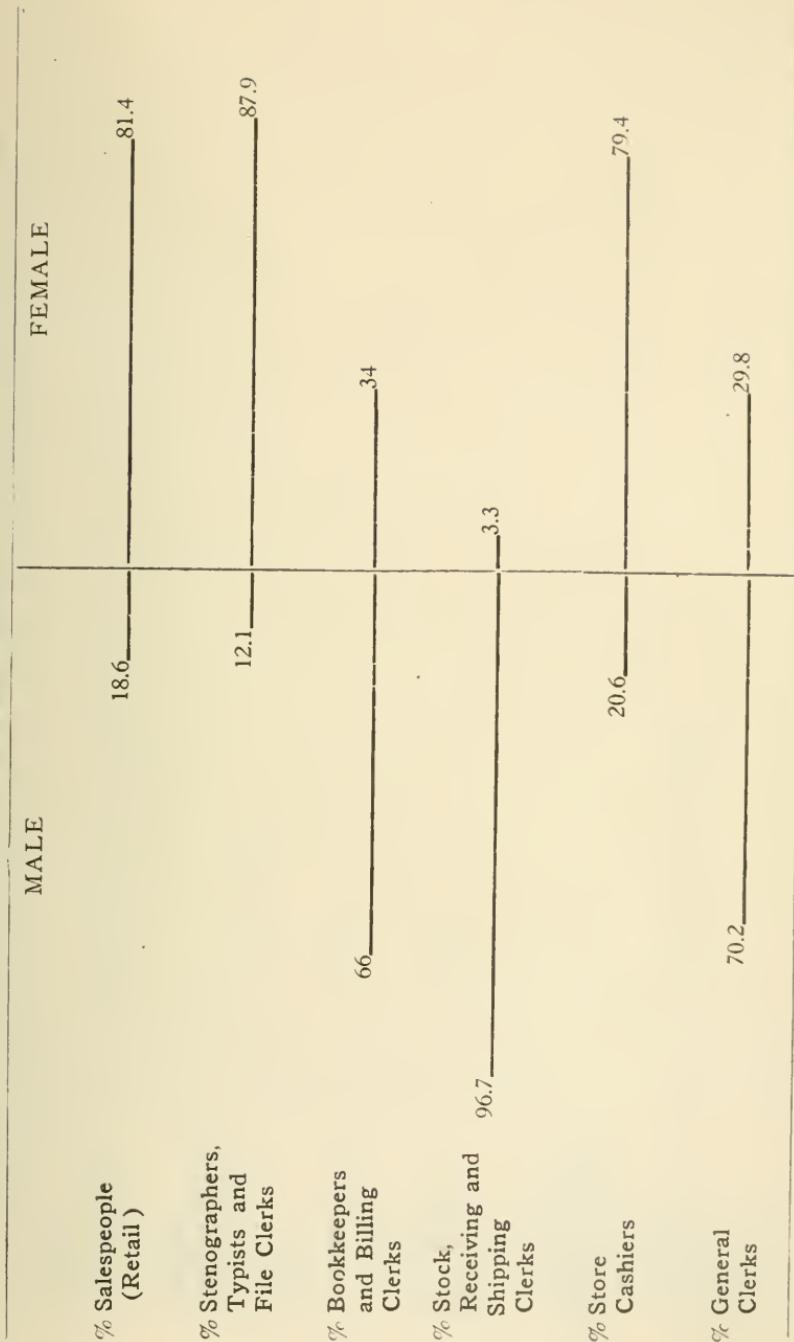


DIAGRAM No. 2



Study of Relative Number of Men and Women Below 26 Years of Age Employed in Major Commercial Positions

DIAGRAM No. 3

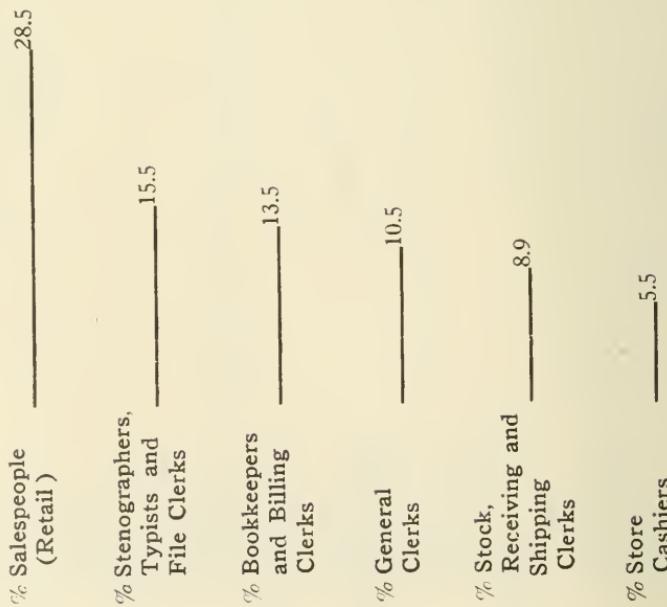
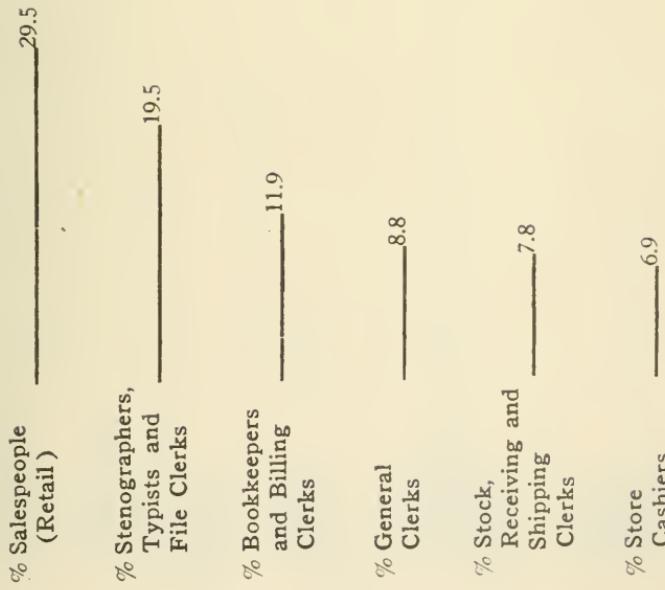


DIAGRAM No. 4



Study of the Distribution of Employees Under 26 Years of Age Among Major Commercial Positions

DIAGRAM No. 5

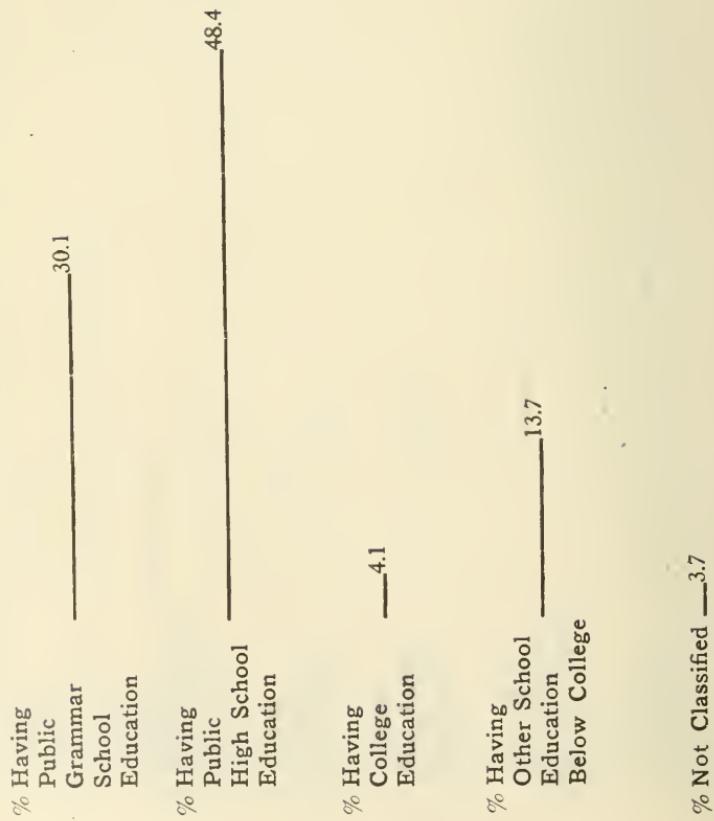
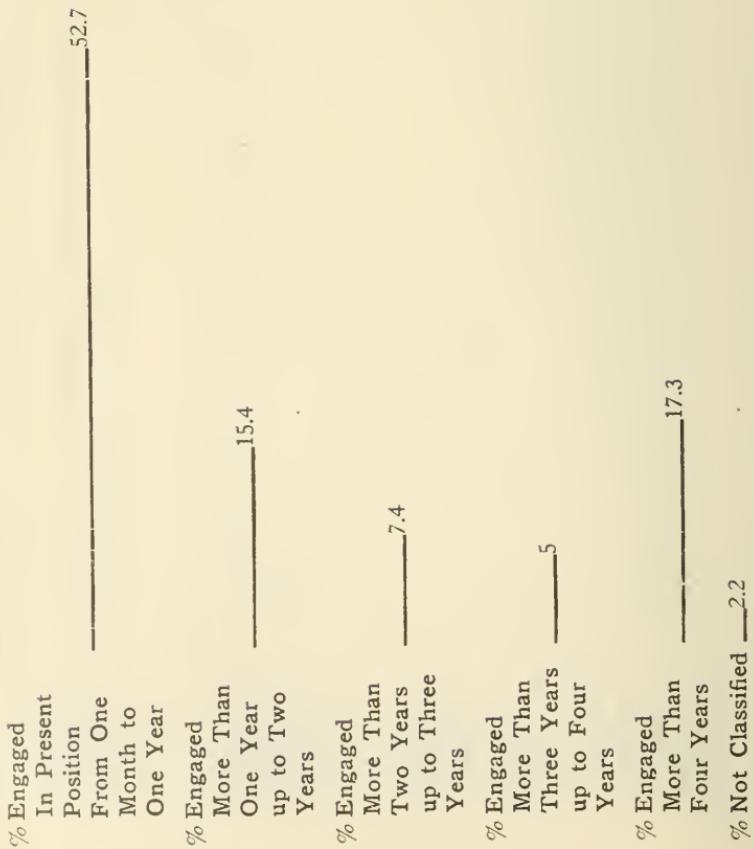


DIAGRAM No. 6



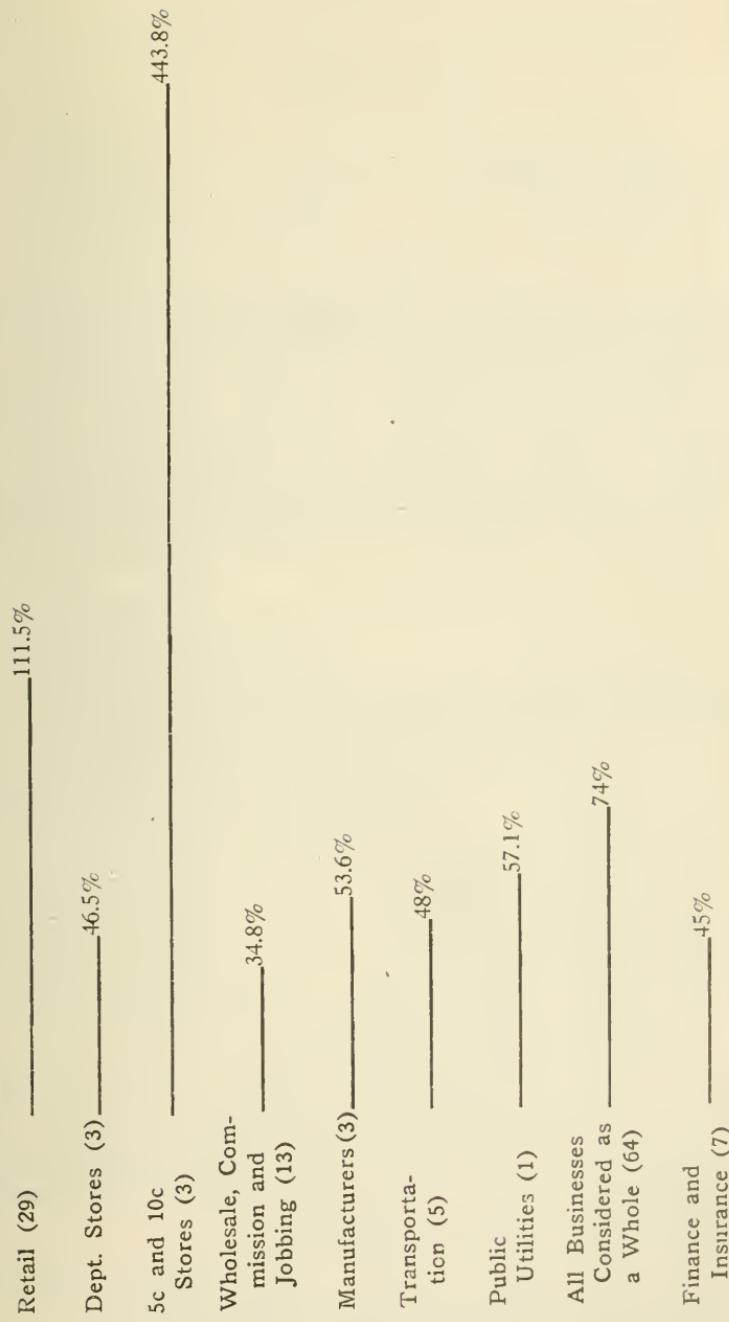
Study of Business Education of Commercial Employees of all Ages

DIAGRAM No. 7



Study of Length of Employment in Present Positions of Commercial Employees of all Ages

DIAGRAM No. 8



Study of Commercial Labor Turnover in 12 Months Preceding May 1, 1920, as Reported by Employees

APPENDIX

CHARLESTON, S. C., COMMERCIAL SURVEY
FORM FOR EMPLOYER

1920

Name of concern.....

Business in which engaged.....

Name and title of person furnishing information.....

Confidential Data

1. Total number of commercial employees engaged, as in office force, sales force, etc. (a) Male..... (b) Female.....
2. Distribution of employees among the different commercial positions. (Fill in special report blank attached.)
3. Is it the rule to promote persons who enter your service in subordinate positions? (Answer yes or no).....
4. Have you established a definite order of promotion among your commercial positions from lower to higher, as for example in sales force or bookkeeping force, so that a sales clerk or ledger clerk beginning in your employ can know the line of promotion ahead of him? (Answer yes or no).....
5. How many commercial employees have been in your continuous service one year or less?..... How many more than one year but less than two years?..... How many, more than two years but less than three years?..... How many, three years and more?.....
6. Number of commercial employees engaged in last 12 months?..... Of this number, how many were graduates of public high schools?..... How many of public grammar schools?..... How many, of private business schools?..... How many, of private schools other than business schools?.....
7. Method of obtaining employees (Check on list given below)
 - (a) Employment secretary
 - (b) Newspaper advertisement
 - (c) Employment agencies
 - (d) Applying to public schools
 - (e) Applying to private business schools
 - (f) Applying to other private schools.
8. Does your concern maintain a school of instruction or supervise the education of its younger employees? (Answer yes or no).....
9. Does your concern encourage employees to attend continuation schools in evenings or at other times? (By "continuation school" is meant any school in which a person continues education while remaining at employment.) (Answer yes or no).....
10. Does your concern give time off from working hours so that employees over 14 years of age can attend school? (Answer yes or no).....
11. Is any attempt made to keep in touch with schools which employees attend to learn of employees' progress? (Answer yes or no).....

12. Is promotion open to those who satisfactorily complete instruction in continuation schools? (Answer yes or no).....
13. Do schools teach bookkeeping which is not useful?.....
14. Do you have difficulty in obtaining competent bookkeepers?.....
In what ways, if any, are they generally deficient?.....
15. Do you have difficulty in obtaining competent sales clerks?.....
In what ways, if any, are they generally deficient?.....
16. Do you have difficulty in obtaining competent stenographers?.....
In what ways, if any, are they generally deficient?.....
17. Do you use dictating machines?..... Do you experience difficulty in obtaining trained operators?..... In what ways, if any, are they generally deficient?.....
18. Do you believe that those being trained for commercial positions should have instruction in use of office appliances: adding machines, calculating machines, bookkeeping machines, filing devices, etc.?.....
19. Is it important that messengers and junior helpers about an office be trained to operate a typewriter?.....
20. Do you believe that fundamental principles of advertising and salesmanship should be taught as part of commercial training?.....
Also business organization and procedure?..... What other subject or subjects would you suggest for training?.....
21. Are employees satisfactorily trained as they come to your service? (If not, please explain.)
 - (a) In spelling.....
 - (b) In penmanship.....
 - (c) In oral English.....
 - (d) In ability to write a letter in correct and clear English.....
 - (e) In ability to perform fundamental operations in arithmetic with accuracy and reasonable speed.....
 - (f) In typewriting.....
 - (g) In proper use of telephone.....
 - (h) In ability to understand and carry out directions.....
22. To bring about higher efficiency, where would you suggest that an increased emphasis be placed in the training of those who are to come into your employ?.....
23. Will you be willing to co-operate with your fellow business men and the public schools in realizing fullest good from the results which the commercial survey will show?.....

CHARLESTON, S. C., COMMERCIAL SURVEY

FORM FOR EMPLOYEE

1920

Name
By whom employed Age

Confidential Data

1. General Education.
 - (a) Public grammar school, grade completed.....
 - (b) Public high school, grade completed.....

(c) Parochial school, grade completed.....
(d) Private school, grade completed.....

2. Business Training.
(a) Public high school business course.
 Actual time enrolled, Years.....Months.....
(b) Parochial school business course.
 Actual time enrolled, Years.....Months.....
(c) Private business school course.
 Actual time enrolled, Years.....Months.....

3. In what year, and approximate month did you leave the school you last attended?.....

4. State on back of this form business subjects studied and how long you studied each. (Example: Stenography, 1 year, 5 periods a week.)

5. Name of present position.....

6. Duties of present position.....

7. How long employed in present position? Years.....Months.....

8. Name next position ahead of yours in line of promotion.....

9. Duties of next position.....

10. What additional school training would be most helpful to you in performance of *Present Duties* and in earning promotion to *Next Position* in order of advancement?.....

11. Have you attended evening or day school business classes while employed at present or previous position? (Answer yes or no).....

SURVEY OF HOUSEKEEPING

MRS. HENRY L. BECK

INTRODUCTORY

The sub-committee on the Housekeeping Survey was composed of:

Miss Louisa B. Poppenheim, Chairman

Mrs. W. P. Boyleston	Mrs. Manning Simmons
Miss Minnie Burns	Mrs. W. G. Storen
Miss Julia Connor	Mrs. M. L. Tibbets
Mrs. Ashley Halsey	Mrs. J. C. Tiedeman
Mrs. Cornelius Huguenin	Mrs. J. M. Visanska
Mrs. B. F. McLeod	Mrs. W. M. Wallace
Mrs. George Moffett	Mrs. C. E. Welling
Mrs. H. J. O'Neill	Mrs. Henry Williams
Mrs. Julia Simonds	Mrs. T. A. Wilbur

In considering the results of this housekeeping survey of Charleston, it is well to bear in mind that the undertaking was a novel one in the community. In an old Southern city, conservative in its traditions and inherited viewpoints, it is but natural that **Novel Undertaking** seemingly new departures in educational lines should make slow progress until their full significance is realized.

Home life in Charleston retains many features of antebellum days when servants were on every hand, none of whom were required to render general household services. In the days of this over-supply of servants, specialization was the order of the day. In the average family, there were the cook, the housemaid, the butler, the laundress and as many nurses as there were small children in the family. In the more elaborately managed homes, each son or daughter was assigned a youthful colored person of the same sex who was trained as his or her body-servant or personal maid. In these same houses the helpers in the various lines of house work were multiplied in proportion to the size of the home and family.

Easy Service The actual amount of labor required of the servants was far less than they were physically able to render and much of their time was spent in comfortable anticipation of responding to some order given by the mistress of the household.

Servant Quarters In the great majority of cases these retinues of servants lived on the premises, as the many homes in Charleston to which the commodious old slave quarters are still attached will testify. There are a number of instances, where the servant quarters contain as many rooms as the house proper.

Care of Servants These same servants who were housed, fed and clothed by the families with whom they lived, were also given adequate medical attention in times of illness. There were occasional donations of cash with which to supply the few demands not included in the generous scheme of provision for their daily welfare.

It is not a difficult matter to draw certain conclusions when one considers this organization of the house.

Quantity of Service Through the influence of generations of similar conditions, the mistress of the home, whose task it was to supervise the work of the servants, had been reared to have a standard of quantity rather than one of quality.

When one worker in a particular phase of home-making failed to accomplish her assigned duties in an efficient manner, the tendency was to seek the remedy by giving her a helper rather than by requiring more and better service. This had its effect upon both mistress and maid.

On the one hand there developed a lack of the realization of the importance of fixed standards of efficiency of the service required and upon the other, a tendency to be content with giving the least possible amount of the service desired.

As the daughters of these homes grew to womanhood it was but natural for them to formulate their standards of home-making upon their environment and so the idea of the **Younger Generation** necessity of being surrounded with many helpers became a fixed one.

Even in homes of moderate size and limited income the possibility of accomplishing the house work with one general helper was not thought of. Such was the general status of domestic service in the home not only previous to the Civil War but for many years following.

Even a decade ago, to one coming to Charleston for the first time, the wages paid for domestic services seemed entirely inadequate until actual conditions were realized. The lump sum paid a servant who

Wages had been trained to cook, clean, wash and iron and to share in the care of the small children of the household, had to be divided among a cook who expected to remain in the kitchen until the early dinner was served and her kitchen put to rights, after which she left for the remainder of the day; a nurse, who in many instances was employed with the understanding that she was also to do the house cleaning; and a laundress, who in the vast majority of cases took the laundry to her own home on Monday morning and returned it on Saturday afternoon. Wages for these various employees ranged from \$1.50 to \$3.50 a week according to the amount of work required and the length of the working day. The average for a cook was about \$2.50 per week. However, the old order changed and gradually the relation between employer and employee has become so that with the exception of the homes in which the descendants of the old family servants are employed year after year, the difficulty of securing satisfactory domestic help in the average home has become the unsolvable problem.

In many homes where from economic pressure, it would seem only practicable for the home maker to manage without a paid helper, the very plan of the house makes this a task too difficult to be undertaken.

The very charm of the characteristic architecture of the old homes of Charleston proved a stumbling block to thrift and good management in days of the abundant supply of domestic servants and no thought **Home Arrangement** was given to the need of conservation of steps or labor. The ruling idea was comfort and the many broad piazzas, the large, spacious, airy rooms, the butler's pantries often

as large as modern kitchens, all combine to make the task of daily cleaning an impossible one for one person who has other demands upon her time and attention. In many instances the kitchen is not even included in the house proper; but is reached by a covered passage way. Charleston is much older than many of her public utilities and in a number of the old homes their introduction proved a difficult undertaking.

Bath rooms had to be placed where space could be found and it is no uncommon sight to see a portion of the second and third floor piazzas ceiled up and converted into bath rooms. They must be reached either through a bed room or by way of the piazza.

Comparatively few of the old homes contain stationary laundry tubs. In many instances the general plan of the house prohibits their introduction

Home Conveniences except in a kitchen already limited in its adaptability to modern requirements. A very common custom of having the laundry taken from the premises and done on the premises of the colored person employed for the work, seems to minimize the importance of the introduction of modern labor-saving laundry equipment in many houses where such installment is entirely practicable. When the fact that this custom is unquestionably the cause of the spreading of many contagious diseases is fully realized, undoubtedly the housewives of Charleston will demand equipment for the home laundry.

In the recently developed portions of the city, modern houses are being constructed and labor saving devices are included in their necessary equipment. The mistresses of these homes agree that with a

Modern Improvements modern plant under their control, a high standard of living and comfort may be maintained therein with a minimum expenditure of time and labor. The younger generation of Charleston is solving the problem of domestic service in a sane, rational way, by planning and building homes that may be cared for in an efficient manner with the help of one trained worker or if necessary by the homemaker herself.

Many of the women of Charleston are awake to the fact that a home run upon a business basis is a strong factor in raising the mental, physical and moral standards of every member of the household, and are therefore eager for an adjustment of conditions which will bring about a general recognition of this established fact.

Business of Homemaking While the idea of an educational survey of the homes of Charleston is a unique one, the practical value of it must be realized before the results hoped for can be fully attained. Although it is a fact that the returns of the survey have not been as complete as was desired, the study of 412 families afford data of sufficient scope to be illuminating, for they have been gathered from every portion of the city.

Limitations of Survey The practical value of the survey of local housekeeping conditions should be many-sided: (1) It should awaken interest in and concentrate thought and planning upon the home as a business enterprise; (2) by suggesting what has already been accomplished in homes elsewhere, it should prove a stimulus for increased efficiency locally; (3) it should suggest the importance of early and systematic training of the homemakers of the future in all

Practical Value of Survey

branches of domestic service through well-planned courses of study in our public schools; and (4) it should awaken both employer and employee to the realization of the necessity of mutual consideration and co-operation.

In making a local study of the homes, the desire was to reach certain

The Purpose of the Survey conclusions from the data furnished as to the prevailing efficiency in the homes and to ascertain to what particular lines in homemaking special attention should be given in order

to establish a general recognition of the importance of efficiency in the home; also to constitute a basis for the organization and development of courses of training in the schools both for girls in school and for young women out of school.

As preliminary to the Housekeeping Survey conferences were held with the following negro ministers, whose aid was cheerfully given:

A. L. Demond	D J. Jenkins
C. C. Jacobs	C. H. Uggans
J. E. Beard	W. W. Mouzon
J. T. Morant	Prof. B. F. Cox
T. B. Nelson	A. F. B. Horry
R. Kemp	C. H. Harrison
E. L. Baskervill	D. T. Curry

METHOD

Upon these two lines of thought a series of forty questions, divided into four sets of ten questions each, was prepared and printed upon four cards, respectively. These questions were planned to touch upon the many details of homemaking in such a manner as to bring forth short, concise answers that could be easily tabulated. In order to secure data from as wide a range of territory as possible and to enlist the co-operation of the housewives of the city, the survey formed sixteen groups of women in various portions of the city to whom the plans of the survey were explained and the sets of cards given. The women of these groups were requested not only to fill in their own sets of cards but also to be responsible for the filling in by other women in their vicinity of from three to five sets additional. Among the sixteen groups thus formed there were twelve among the white people of the city and four among the colored. A specific time was given to each group in which to have the cards filled in and returned to the leader of the group. The leader in turn submitted the filled-in sets of cards to the survey.

Two meetings each were held with twelve groups and one meeting with the remaining four groups. The results obtained from both methods were practically the same. In no group was there a complete return of cards and in the great majority of groups the number of cards I turned in exceeded the number of cards II, III or IV. Over five hundred sets of cards were placed in the hands of the homemakers of Charleston in every section of the city, and but for the very novelty of the undertaking it is believed that a fuller return than was actually realized would have been forthcoming. It was in all probability a lack of a full realization of the importance of the practical information to be obtained from the data submitted which resulted in a more or less incomplete return. It is believed, however, that tabulations from sets of cards submitted by more than three hundred homemakers widely distributed throughout the city will give a fairly accurate statement of conditions from which definite conclusions may be drawn.

INQUIRY CARDS USED

Card I. Domestic Employment.

CHARLESTON SURVEY

Housekeeping

1. Occupation of head of house.....
2. Number of family. Adults..... Minors.....
3. Number of servants employed, if any.....
4. Do you prefer trained or untrained servants?.....
5. Have you any difficulty in securing efficient workers?.....
6. Usual method of securing servants.....
7. If situation with regard to domestic help is unsatisfactory, state whether you attribute same to wages, length of working day or training.....
8. Do you think it practicable to secure cheerful, efficient service?.....
9. Do you regard housekeeping as a business proposition?.....
10. Are you interested in placing homemaking on a systematic, scientific basis?.....

Card II. Household Organization.

CHARLESTON SURVEY

Housekeeping

1. Do you rent or own your house?.....
2. If rented, does the landlord keep drains, water pipes and other appurtenances in sanitary condition?.....
3. (a) State the number of rooms in the house?.....
(b) Number of sleeping rooms?.....
4. Are your kitchen and pantry arranged to conserve steps and labor?.....
5. Do you follow a specific plan in fulfilling your daily duties?.....
6. Do you apportion or budget your expenses?.....
7. Do you have a system of keeping household accounts?.....
8. Do you read gas, electric and water meters in order to check the bills rendered?.....
9. State the daily disposition made of garbage and other refuse on the premises?.....
10. Check any of the following labor-saving devices to be found in your house:

(a) Power washing machine	(e) Fireless cooker
(b) Stationary laundry tubs	(f) Power dish-washer
(c) Electric iron	(g) Sewing machine
(d) Vacuum cleaner	(h) Carpet sweeper
(i) Floor mop	

Card III. Food and Purchasing.

CHARLESTON SURVEY

Housekeeping

1. Do you prefer making your purchases direct or over the phone and give your reasons for same.....
2. Do you prefer purchasing in large or small quantities and give your reason for same.....

3. Do you have daily deliveries at your home?.....
Average number per day.....
4. Do you examine your daily purchases with reference to receiving full value in weight and measure?.....
5. If a cook is employed, do you give out your meals or have your servants free access to the pantry?.....
6. Are your meals planned with regard to nutritive value and proper balance?.....
7. Is your method of household purchasing by cash, the monthly credit system or installment plan?.....
8. Which, in your opinion, is the most desirable method?.....
Why?
9. To what extent do you utilize "left overs" in your daily menus?.....
10. Do you remodel clothing?.....

Card IV. Home Service and Training.

CHARLESTON SURVEY

Housekeeping

1. Will you state what weekly wages you consider reasonable and just for services, trained and untrained in various classes of home work?.....
2. What do you consider reasonable hours for a working day?.....
(a) What special periods of freedom from duties should be given?.....
3. Are there living accommodations for hired help on your premises?.....
4. In your opinion, can the work of a home of moderate size equipped with labor-saving devices be done efficiently, by one well-trained servant?.....
5. If you have children, have they any daily duties to perform to stimulate interest in the welfare of the home?.....
6. Are their hours regulated as to sleep, meals, study and recreation?.....
7. Do you belong to any organization the object of which is to further interest in the home?.....
8. Do you subscribe to or read any magazines devoted to the problems of homemaking?
9. Have you had any special training in any branch of homemaking?.....
10. If classes in housekeeping were available, what special courses would you prefer?

(a) For yourself?.....

(b) For your servants?.....

EXTENT OF SURVEY

As evidence of the extent of the Housekeeping Survey of Charleston, a list of the occupations of the heads of families, given in reply to Question 1, on the cards is here given.

This list is not complete, for on some of the cards the question was unanswered, and on others the reply could not be classified.

Not a few misconstrued the question in spite of the definite explanation given previous to the distribution of cards. The greatest preponderance of the repetition of the occupation of "Housekeeper" showed that the answer

to the question was given from the standpoint of the housewife instead of the bread-winner of the family. The tabulation of the answers given by the groups of colored women is separate, as it is thought to be of interest and benefit to study the two lists in comparison.

OCCUPATIONS OF HEADS OF FAMILIES

White

Accountant	Drug syndicate mgr.	Moving picture manager
Advertising manager	Druggist	Music house manager
Advertising man	Editor	Navy officer
Antique furniture dealer	Electrician	Newspaper manager
Architect	Electrical engineer	Newspaper employee
Army officer	Engineer	Office man
Attorney	Estimator	Optometrist
Auditor	Filing clerk	Optician
Automobile salesman	Fireman	Painter
Automobile dealer	Foreman	Paint merchant
Banker	Fruit dealer	Patrolman
Bank cashier	Garage manager	Physician
Bank teller	Garage mechanic	Pilot
Bookkeeper	Garage owner	Pipe fitter
Brakeman	Gas man	Planter
Broker	Grocer	Plumber
Builder	Hardware dealer	Policeman
Butcher	Hotel employee	President Oil Co.
Buyer	Housekeeper	Pressing club manager
Bank president	Inspector	Printer
Bank clerk	Insurance agent	Produce dealer
Boarding housekeeper	Janitor	Public official
Boiler maker	Jeweler	Publisher
Brick dealer	Lineman	Purchasing agent
Brick mason	Lithographer	Quartermaster
Building contractor	Lumber broker	Railroad superintendent
Business woman	Lumber dealer	Railroad employee
City salesman	Machinist	Real estate dealer
Civil engineer	Manager Chamber Commerce	Restaurant keeper
Chemist	Manager of factory	Retired business man
Clerk	Manufacturer	Salesman
Coal exporter	Manufacturing employee	School principal
Coal merchant	Mariner	Secretary
Collector	Master mechanic	Ship carpenter
Conductor	Measurer	Ship fitter
Contractor	Mechanic	Ship joiner
Cotton broker	Merchant	Ship keeper
Cotton buyer	Merchandise broker	Shipping clerk
Cotton dealer	Milliner	Shipper
Corporation manager	Minister	Shoe dealer
Dentist	Motorman	Stenographer
Draftsman	Moulder	Stenotypewriter
		Stone mason

Supt. of factory	Traveling salesman	Watchman
Supt. of oil mill	Treasurer of corporation	Wholesale grain dealer
Switchman	Truck grower	Wholesale grocer
Taxidermist	Typesetter	Wood dealer
Teacher	U.S. Govt. official	Wood worker
Traffic manager	U.S. Govt. employee	Yard master
Train master	Watchmaker	

Colored

Banker	Grocer	Retired business man
Barber	House cleaner	Seamstress
Blacksmith	Housekeeper	Stenographer
Boarding housekeeper	House worker	Steward
Brick mason	Janitor	Storekeeper
Butcher	Laundress	Tailor
Butler	Lunch room keeper	Teacher
Carpenter	Mail clerk	Tinner
Cement finisher	Messenger	Trained nurse
Chauffeur	Messenger U.S. Court	Typewriter
Chef	Minister	U.S. postal cierk
Clerk	Painter	U.S. Navy Steward
Cook	Physician	Undertaker
Cotton sampler	Postman	Waiter
Dress maker	Practical nurse	Washer
Druggist	Pressing club owner	Watchman
General house worker	Real estate agent	

STUDY OF OCCUPATIONS

Among the one hundred and fifty occupations given, the number listed under "merchant" was the greatest. The engineers, lawyers, bookkeepers, electricians, clerks, and brokers took second place, being closely followed by the physicians, machinists, insurance agents, managers of various organizations, foremen, civil engineers, carpenters, and traveling salesmen.

Under the many other occupations named, the number of those classified under each varied from one to five.

This classification under one hundred and fifty occupations includes the answers given on two hundred and ninety-eight cards, except where the question is unanswered or unclassified.

The same preponderance of the answer "housekeeper" is noted in the list of occupations submitted on the cards of the colored groups as on those of the white groups. Here the similarity ends, however. The carpenters take first place, followed by ministers, brick masons, tailors and house workers. These in turn are followed by trained nurses, dressmakers, laundresses, and butchers; and those classified under other occupations named vary from one to three.

The classification under fifty occupations includes the answers given on one hundred and eight cards, except where the question is unanswered or unclassified.

STUDY OF INQUIRIES

For convenience of study the ten questions on the four cards each may be grouped under the four following heads, respectively: Card I: Domestic Employment. Card II: Household Organization. Card III: Foods and Purchasing; and Card IV: Home Service and Training.

I. DOMESTIC EMPLOYMENT

By referring to the Inquiry Card I, it will be found that the ten questions bearing upon the subject deal with several phases of domestic employment. The first and second questions are of an introductory nature; the first having been already discussed in the section which classifies the various occupations of heads of families.

The answers to the second question, which deals with the size of each household disclose the fact that there are more families with three, four and five members each than of any other specified size.

Size of Families This is true of the white families, but a glance at the tabulation of the colored families will show that with them the largest number of families contains two, three and four members per family. Among the cards turned in there were so many upon which the division of adults and minors was not noted that an accurate tabulation of the number of children per family could not be made. Of those specifying the number of minors in the family, there were more who gave two and three per family than any other number.

A study of the answers given to question 3 brings out the fact that the number who do not employ any servant almost equals the number who employ one servant; and the combined number of those employing

Number of Servants Employed two, three or more servants is just about one-half of the number who employ one servant. Among several comments made upon the cards in regard to the number of servants employed, one housekeeper makes the following remark: "With one well-trained servant, fully occupied and well paid, results are best." It was noted that in the large families, one servant was almost invariably the rule. This condition may be partially explained by the fact that where there are older children who assume certain responsibilities the work of the house is so divided and arranged that only one servant is needed to perform the heavier tasks of the daily routine of duties.

Colored Families A very small proportion of the colored families listed employ servants and only one in the one hundred and nine reporting employ two. In this particular instance both the family and home were large.

Type Investigated The groups of colored housekeepers to whom the plan of the survey was presented were drawn from the best type of the race. They are self-respecting, intelligent homemakers, interested in the welfare and development of their own people and also of the community. For obvious reasons, only this type was called upon to answer the questionnaire of the home survey.

The preponderance of affirmative answers to the question relating to the preference for trained servants needs no discussion. However, there was a fact which presented itself in the group meetings which

Trained Servants cannot be shown in the tabulation of answers given on the cards. The standard implied by the term "trained servant" is not a fixed one. In a great many instances the term was used to designate a servant trained in one particular line of domestic service rather than one who had been trained in several lines of housework.

Untrained Servants Of the number who prefer untrained servants, there were several who stated that they obtain best results when untrained servants were secured and were then trained in the employer's own particular ways of doing things. When there is a general recognition of the fact that there are certain fixed standards in the art of homemaking, and when there is a general acceptance of these standards, both on the part of the employer and the employee, this training in the home for adaptation of service to personal preferences will simply mean the mutual acquaintance of employer and employee.

Difficulties in Securing Efficient Service The difficulty of securing efficient workers seems indeed great in both white and colored families, though a vast majority of those who answered the questions agree that it is practicable to secure cheerful, efficient service. The unsatisfactory condition prevailing is partially explained in the answers given to question 7. In this particular instance it is very interesting to note the dissimilarity of the answers submitted by the white and the colored housekeepers. The great majority of the former attribute the situation to a lack of training of the available domestic help; while the greater number of the latter attribute the same to wages. There were many of the white housekeepers who consider wages, the length of the working day, and a lack of training as contributing factors to the unsatisfactory situation. The concensus of opinion was that the prevailing scale of wages for untrained help is too high; that the working day is too short; and that the extreme scarcity of really trained help contributes to the lowering of standards of service rendered and of service required. However, there were a few who stated that the average working day is too long and the wages too low for even untrained domestic service. One colored housekeeper thinks that the root of the trouble is a lack of mutual understanding of employer and employee.

Of the total number of 412 who answered this question there were five white and four colored housekeepers who considered the situation with regard to domestic help satisfactory. One of the former remarked: "I have never had any difficulty for I treat my servants as human beings." Another has had her maid for fifteen years; another for twelve years and still another for eight years. One housekeeper who notes the unsatisfactory condition of domestic help, feels that the situation has developed in recent years and is partly due to the relative independence of the women brought about by the greatly increased wages of the men. Another says: "Too many servants, slack supervision and laziness of those employed make the situation unsatisfactory." Still another remarks: "People allowing and accepting poor service accounts for the trouble."

The usual methods employed for securing servants vary but the favorite method in both white and colored homes is by inquiry. This method takes various forms. In some instances the assistance of a friend's

**Methods in
Securing
Service**

maid is sought or perhaps a retained servant will secure the desired help; and at times a former employee may give information that leads to locating a possibility. Following the number who use some form of inquiry as the usual method of securing help there comes the group who prefer advertising or the answering of advertisements. In many instances where these two methods are used the employer requires written references. However, one housewife feels that advertising is a poor way to secure satisfactory service. She remarks: "Advertising is not good, answering advertisements is worse." Many who secure help by direct solicitation feel that this is not the best method to employ; but emergencies arise which make it necessary to fill a vacancy which occurs at the earliest possible moment and this method brings the quickest results. The fact that very few servants are employed through agencies indicates that Charleston has no developed system of employment agencies, a fact that deserves serious consideration. There seem to be few applicants for domestic employment, but with adequate employment agencies where both employer and employee might list their desires and preferences a modification of this fact might be forthcoming.

It is most encouraging to find such general interest shown by the housekeepers, both white and colored, in placing homemaking on a systematic, scientific basis. Even the few who do not regard housekeeping as a business proposition are interested in seeing the home become an efficient working plant. With this fact accomplished, the desire for business-like management would closely follow.

Number of Families of Specified Size

WHITE

COLORED

Size of Family	Number of Families	Size of Family	Number of Families
1	0	1	6
2	39	2	26
3	70	3	19
4	62	4	21
5	51	5	9
6	33	6	11
7	25	7	9
8	7	8	3
9	5	9	3
10 or more	11	10 or more	2
<hr/>	<hr/>	<hr/>	<hr/>
Total	303	Total	109

Domestic Employment—Number of Servants Employed—Preference and Ability to Secure Efficient Service

HOUSEKEEPERS

White Colored

Total number of cards turned in.....	303	109
Number who employ one servant.....	127	20
Number who employ two servants.....	51	1

	HOUSEKEEPERS	
	White	Colored
Number who employ three or more servants.....	14	0
Number who do not employ servants.....	111	88
Number who have laundry done at home but do not employ a regular servant (included in 111 who do not employ servants)	27	0
Number who prefer trained servants.....	257	86
Number who prefer untrained servants.....	19	0
Number who did not answer the question.....	27	23
Number who have difficulty in securing efficient workers.....	198	52
Number who have no difficulty in securing efficient workers.....	63	24
Number who did not answer question.....	42	33
Number who think it practicable to secure efficient service.....	245	91
Number who do not think it practicable to secure efficient service	40	3
Number who did not answer question.....	18	15

*Unsatisfactory Situation with Regard to Domestic Help Attributed to
Specified Cause*

CAUSES SPECIFIED

Low wages	22	43
Length of working day.....	6	4
Lack of training.....	166	23
All three causes mentioned above.....	51	8
Situation considered satisfactory.....	5	4
A lack of mutual understanding.....	0	1
Unanswered questions	53	26
 Total.....	 303	 109

Usual Method of Securing Servants

Number who advertise or answer advertisements.....	75	14
Number securing by inquiry.....	77	38
Number secured through recommendation	32	0
Number securing by direct solicitation	25	7
Number securing from applicants	7	2
Number securing from employment agency.....	3	1
Unclassified answers	4	0
Number who did not answer the question.....	80	47
 Total.....	 303	 109

*Housekeeping Regarded as a Business Proposition, and Interest in Placing
Homemaking on a Systematic Basis*

Those who regard housekeeping as a business proposition.....	230	102
Those who partly regard housekeeping as a business proposition	28	0

HOUSEKEEPERS

White Colored

Those who do not regard housekeeping as a business proposition	29	0
Those who did not answer the question.....	16	7
 Total.....	 303	 109
Those interested in placing homemaking on a systematic, scientific basis	280	105
Those not interested in placing homemaking on a systematic, scientific basis	5	0
Those who did not answer the question.....	18	4
 Total.....	 303	 109

II. HOME ORGANIZATION

The proposition of listed homes that are owned is worthy of comment. The satisfaction and contentment that come with the knowledge of the possession of a home have a strong moral influence. Children, like animals, are happier in familiar surroundings and when moved from temporary home to temporary home some very desirable traits have no opportunity to develop. The development of interest and activity in making the home a social unit is much simplified when environment remains the same. An ideal condition would be for every family to own the home, no matter how simple that home might be.

Of the number renting homes almost one-half of the white housekeepers and more than one-half of the colored report that the appurtenances are not kept in sanitary condition by the landlords. Public opinion might be centered on this unfortunate fact for a time, for this condition should be corrected as speedily as possible.

In one of the groups of housekeepers, the oft repeated fallacy that the renter pays no taxes was presented. The fact that he Renter does pay taxes as inevitably as the property owner was emphasized in a thorough discussion of the subject. It was Pays Taxes generally agreed that it is a poor business man indeed who does not include taxes, insurance, up-keep charges, and interest on his investment in his rental charges.

Examination of the tabulation of the specified sizes of homes will show that more white families dwell in homes of six, seven and eight rooms than of any other size; while more colored families occupy homes of five, six, eight and nine rooms. Inquiries regarding the Size of Homes proportionately large number of eight and nine room houses occupied by colored families, revealed the fact that in some cases a portion of the house is used for other purposes than living quarters for the family; and in other cases a part of the home is rented to outsiders. With reference to both white and colored families, the greater proportion of those listed utilize two, three and four rooms as sleeping rooms, according to the size of the family. If a family of five members be taken as typical in size and if a home of seven rooms containing three bed rooms be taken as

a typical home, it will be seen that conditions are favorable for developing the elements necessary to make the home what it should be—a typical social unit.

While it appears from tabulated figures that the majority of the homes of both white and colored families contain kitchens and pantries arranged to conserve steps and labor, the degree of such arrangements

Poorly Arranged Homes may be comparative. It was stated in the early part of this report that many of the old homes of Charleston contain kitchens and pantries which do not easily lend themselves to modern equipment. With this fact in mind, it would seem

that the standard for a typical kitchen and pantry, arranged for efficiency in the performance of culinary tasks, is not a uniform one. In comparing the sets of cards from various groups it was found that the larger proportion of well-arranged kitchens and pantries were reported from the more recently developed portions of the city, where the modern type of home is prevalent. Another fact presenting itself is worthy of note; namely, there is a larger proportion of well-arranged kitchens and pantries in the homes that are owned than in the homes that are rented.

It would seem that there are many more housekeepers who follow a specific plan in fulfilling their daily duties than who budget their expenses or who have a system of keeping household accounts. The

Specific Plan of Housekeeping specific plan of work is such an excellent beginning in the task of placing homemaking on a business basis than one feels constrained to urge the general adoption of these other two important measures as speedily as expediency permits.

A separate section of this report is devoted to the subject of budgeting which holds such a conspicuous place in home economics. The keeping of household accounts naturally follows budgeting but budgeting is not an essential in keeping household accounts. It seems almost necessary that some system, no matter how simple it may be, must be employed if there is to be any knowledge of expenditures.

It is evident that only a few housekeepers of Charleston have formed the habit of reading the gas, electric and water meters immediately after a visit from the readers sent out by the various

Reading Meters companies. It is probable that the importance of such a comparatively little thing has not been realized. The task is so simple and so quickly accomplished and the preserved records of the readings form such a valuable reference sheet that the results obtained far exceed the labor involved.

The matter of the disposition of garbage and litter that so quickly accumulate within the precincts of a home proved a very interesting question to the housekeepers, both white and colored. In the dis-

Garbage Disposal cussion of the matter members of several groups expressed the opinion that the humid climate of Charleston affects garbage very quickly. This fact is used as a strong argument

in favor of daily collections by city carts rather than the now prevailing custom of three collections per week. It was stressed that in summer particularly, the matter of the disposition of shrimp heads meat trimmings, etc., which collect between Fridays and Mondays or between Saturdays and Tuesdays presented a problem to many housekeepers. The fact that summer is the season of fresh vegetables and fruits, the shells, tops, roots, peelings and

husks of which greatly add to the bulk of the garbage, emphasizes the importance of daily collections by the city carts.

A glance at the tabulation of labor-saving devices to be found in the homes of those who answered the questionnaire, shows that electric irons, sewing machines and floor mops lead the list by a great margin. The proportion of sewing machines to be found in the homes of the colored housekeepers is somewhat larger than that of the white ones. This may be due to the fact that there were a number of seamstresses among the colored families reporting. It is encouraging to note that more than twenty per cent of the homes of the white families are equipped with vacuum cleaners and almost thirty-five per cent with carpet sweepers.

The comparatively high cost of some of the power labor-saving devices prevents their being in many homes the mistresses of which fully realize their desirability and value. To some this initial cost makes them

Cost of Labor-Saving Devices seem prohibitive; but if a great saving of time and labor has a specific value and if by equipping a home with labor-saving devices the weekly expense of domestic help is reduced, the equipment will pay for itself in time. One housekeeper verbally reported her experience with a power washing machine. Before its installation she kept three servants, a cook, a housemaid and a laundress. The house is one of the old spacious Charleston homes, requiring a maximum of labor to obtain satisfactory results in housekeeping. The time of the three servants was fairly well taken up with their respective duties; but according to general custom the cook left the premises when the cleaning up after a two-thirty dinner was accomplished. By installing modern laundry equipment, including a power washing machine, by systematizing the work of the cook and increasing her wages a little on account of longer hours of service required, the housekeeper in question has entirely done away with the laundress, the cook handling both her own work and the laundering with apparently no additional fatigue.

The convenience and help of a fireless cooker, especially to a housekeeper who does all of her own work, can hardly be overestimated. Practically the entire cooking of a dinner can be done in the cooker while the housewife is engaged in other duties or is even away from the home. This excellent labor-saving device could be used to great advantage in many more homes than the number listed.

Fireless Cooker Of the 313 housekeepers returning Card II, only eleven, nine white and two colored, reported stationary laundry tubs as one of the labor-saving devices to be found in their homes. It was stated in the first part of this report that the custom of sending the laundry from the premises prevails in Charleston. This, in part, explains the very small percentage of families having stationary laundry tubs in their homes.

Home Organization

HOUSEKEEPERS

	White	Colored
Families who own homes.....	125	52
Families who rent homes	104	32
Rented houses kept in sanitary condition.....	70	13
Rented houses not kept in sanitary condition.....	34	19
Homes of 3 rooms.....	5	2
Homes of 4 rooms.....	11	4
Homes of 5 rooms.....	21	13
Homes of 6 rooms.....	51	21
Homes of 7 rooms.....	33	4
Homes of 8 rooms.....	43	18
Homes of 9 rooms.....	25	14
Homes of 10 rooms.....	16	6
Homes of 11 rooms.....	9	0
Homes of 12 rooms.....	7	2
Homes of 13 rooms.....	3	0
Homes of 14 rooms.....	5	0
Homes of 1 sleeping room.....	10	5
Homes of 2 sleeping rooms.....	38	16
Homes of 3 sleeping rooms.....	73	19
Homes of 4 sleeping rooms.....	74	29
Homes of 5 sleeping rooms.....	20	7
Homes of 6 sleeping rooms.....	6	8
Homes of 7 sleeping rooms.....	2	0
Homes of 8 sleeping rooms or more.....	6	0

*Convenient Arrangement of Kitchen and Pantry—Specific Plan for Daily Duties
—Budgeting Expenses, keeping Household Accounts and Reading Meters—
Daily Disposition of Garbage and Other Refuse.*

Number who have kitchen and pantry arranged to conserve steps and labor.....	153	65
Number who do not have kitchen and pantry arranged to conserve steps and labor.....	69	19
Number who have kitchen and pantry partly arranged to conserve steps and labor.....	7	0
Number who follow specific plan for daily duties.....	137	67
Number who do not follow specific plan for daily duties.....	61	17
Number who partly follow specific plan for daily duties.....	26	0
Number who did not answer question.....	5	0
Number who budget expenses	50	37
Number who do not budget expenses.....	142	47
Number who partly budget expenses.....	29	0
Number who did not answer question.....	8	0
Number who have a system of accounting.....	64	42
Number who have no system of accounting.....	156	42
Number who have a partial system of accounting.....	9	0
Number who read gas, electric and water meters.....	32	13
Number who do not read gas, electric and water meters.....	197	71

HOUSEKEEPERS

White Colored

Number whose garbage and other refuse collected two or three times per week by city carts.....	205	71
Number who burn or bury garbage and other refuse.....	16	7
Number who feed garbage to animals or fowls.....	8	6

Houses Equipped with Labor-Saving Devices

Number having power washing machines.....	10	2
Number having stationary laundry tubs	11	2
Number having electric iron	168	28
Number having vacuum cleaner	46	3
Number having fireless cooker	26	5
Number having power dish washer	5	0
Number having sewing machine	194	75
Number having carpet sweeper	74	15
Number having floor mop	185	53
Number having steamer	3	0
Number having simplex ironer	1	0

Various Combinations of Labor-Saving Devices to be Found in Homes

COMBINATIONS

Electric iron and sewing machine.....	5	4
Electric iron and floor mop.....	3	1
Sewing machine and floor mop.....	19	20
Electric iron, sewing machine and floor mop.....	59	11
Electric iron, sewing machine, floor mop and carpet sweeper....	29	3
Carpet sweeper and sewing machine.....	0	3
Carpet sweeper, sewing machine and floor mop.....	0	6
Carpet sweeper, sewing machine, floor mop and fireless cooker	11	1
Sewing machine, floor mop and fireless cooker.....	0	1
Carpet sweeper, sewing machine, floor mop and vacuum cleaner	3	1
Electric iron, sewing machine, floor mop and vacuum cleaner	8	0
Electric iron, sewing machine, floor mop and fireless cooker....	12	1
Electric iron, sewing machine, floor mop, fireless cooker and vacuum cleaner	12	2
Electric iron, sewing machine, floor mop, vacuum cleaner and power dish washer	1	0
Electric iron, sewing machine, floor mop, carpet sweeper and power washing machine	3	1
Electric iron, sewing machine, floor mop, carpet sweeper and power dish washer	2	0
Electric iron, sewing machine, floor mop, carpet sweeper and stationary laundry tubs	2	0
Electric iron, sewing machine, floor mop, vacuum cleaner, sta- tionary laundry tubs and power washing machine.....	3	1
Electric iron, sewing machine, floor mop, vacuum cleaner, sta- tionary laundry tubs and power dish washer.....	1	0

III. FOODS AND PURCHASING

The variety of reasons given for certain preferences in methods of purchasing indicate many angles of consideration of the subject. A careful study of the tabulation of the preferences and reasons for same is quite illuminating. In both white and colored families **Buying Foods** more housekeepers purchase directly than over the phone and the number using both methods exceeds the number of those who depend entirely upon the phone. Of the many reasons given for direct purchasing, the two "better selections" and "better values," predominate. Both of these are rational, logical reasons for direct purchasing and indicate the thought and consideration given to the subject by the housewives preferring this method.

The reasons given for purchasing over the phone: namely, "convenience" and "saving of time and trouble" indicate one of two conditions prevailing in the homes where this method is employed; either the housekeeper's time is so filled with other duties that she can afford to give only a minimum amount of time and consideration to her purchasing; or she does not fully realize the value of personal inspection of contemplated purchases. A combination of both direct purchasing and the use of the phone is perhaps a more general method than the tabulated figures indicate. In several of the groups of women where the questions were discussed, this combination method seemed to predominate. Purchasing vegetables from hucksters on the street prevails in all parts of the city, as well as the very general custom of purchasing shrimp, live chickens, eggs and fresh fruits in season from vendors of the same. Charleston lacks what many other cities consider not only an asset but a necessity: namely, a large central market where the consumer and the producer have the opportunity of direct bargaining, without the mutual expense of the middleman. With flourishing truck farms on every side, Charleston should have a municipal market, planned and managed on modern lines, the establishment of which would be welcomed by many housewives.

It is stated by many who purchase both directly and over the phone that staples may be ordered by the latter method with the assurance of securing equally as good quality and value as when purchased directly. On the other hand some who make all purchases directly claim that often the substitution of an inferior article is accepted over the phone, whereas, an inspection of the same article would result in a refusal of the substitution. There is doubtless a great deal of truth in this last argument.

The opinions expressed upon the matter of purchasing in large and small quantities were as varied upon the preferred methods of making purchases.

Purchasing in Quantity This particular phase of purchasing is so closely allied with the subjects touched upon by the two following questions of the group under discussion; namely, the matter of daily deliveries and the method used in assembling pantry supplies, for a meal, that the three may be taken up together. It developed that those who purchase in large quantities are the ones who do not have daily deliveries at their homes. Also, a large proportion of those who have no servants purchase in large quantities. One conclusion reached from considering this fact is that for some reason many who have servants consider it expedient to purchase in small quantities. Some specify a reason in their answers. Many housekeepers in considering the desirability of purchasing in large quantities

put even the item of ice under this head. The fact that it is more economical to purchase a refrigerator's capacity of ice occasionally rather than to purchase a small piece each day was brought out in more than one of the group meetings. This method of purchasing also eliminates the daily delivery of ice.

Those purchasing in small quantities necessarily have more deliveries per day; but some feel that uncertain prices, fresher groceries, the difficulty preserving groceries in a humid climate and small storage places are arguments which overbalance a certain saving in time, trouble and expense. A very interesting point made by several housekeepers is the fact that they actually use smaller quantities in cooking when purchases are made in small quantities, thereby eliminating waste. This same point of the elimination of waste is used as an argument in favor of purchasing in large quantities but no specific illustration is given.

It would seem that the number having servants, to whom they give out the food supplies and the number who permit free access to the pantry by the servants are almost equal. In several instances where the

Pantry Management meals are given out a word is added to the effect that the pantry is at all times accessible to the servant. An argument given in favor of purchasing in small quantities is that it prevents thieving, in that the mistress can more easily check up on the amount taken from receptacles day by day. The argument that less waste results from purchasing in small quantities is substantiated by the statement that servants take out smaller quantities to cook and are more careful not to burn foodstuffs when only a limited amount is available. The opinion that a well-trained servant might possibly take a certain pride in proving herself capable of economical management was not expressed.

The question of the examination of daily purchases with reference to receiving full value in weight and measure was thoroughly discussed at the group meetings and the concensus of opinion was that this

Weights and Measures is a very important point in business-like housekeeping. It was argued that a minimum amount of this is necessary where direct purchasing is the method employed for obvious reasons. Securing full weight when purchasing ice seems to be a stumbling block for many Charleston housewives. According to their statements ice is delivered from the wagons without being weighed and complaints of receiving short weight receive little attention. On the other hand, after such an experience it is difficult to secure service from the same ice wagon. This condition is so disheartening to the housekeeper who must have ice in warm weather that she is often lax in her demands for full weight. Many who stated that they examine purchases confessed they had no scales nor standard measures and were therefore helpless in proving their contention of receiving short weight or measure.

The proper planning of meals is such an important phase of housekeeping that a more detailed discussion than can be given here has been included

Planning Meals under the heading "menus." It is to be hoped that the time will arrive when every housekeeper in the land will so fully realize the importance of this task, that the serving of an unplanned meal will bring forth as great censure as the living in an unswept house.

If answers to the question of the most desirable financial method of making purchases is the true index of general tendencies, there is room in Charleston for many more "cash and carry" stores than exist at the present time. In the answers given by both white and colored housekeepers, those considering cash the most desirable method far exceeded all others. However, there are fewer who actually practice this method than who consider it most desirable. It will be seen that some of those whose incomes are available at the end of the week or the month give this as their reason for preferring the weekly or monthly credit system. If matters could be so adjusted that the necessary amount of cash for a week's or a month's supply of groceries could be accumulated, no doubt some of these would prefer the more desirable method of cash purchasing. This very interesting fact presented itself from a comparative study of the cards. The larger proportion of the housekeepers purchasing for cash also purchase directly, while the larger proportion of those who purchase on the credit plan purchase over the phone entirely or in part.

It is evident that many of the housewives of Charleston are practicing thrift in a consistent, systematic manner for the numbers who use "left-overs," in planning their daily menus and who remodel clothing are most encouraging.

Foods and Purchasing—Methods of Making Purchases and Reasons for Same

	HOUSEKEEPERS	
	White	Colored
Number who purchase direct	112	48
Number who purchase over the phone.....	52	10
Number who use both methods.....	57	15
Number who did not answer question.....	8	11
	—	—
	229	84
Reasons given for direct purchasing—		
1. Convenience	0	3
2. More satisfactory..	19	3
3. Better selections....	33	30
4. Better values.....	30	0
5. Better service.....	18	0
6. Better quality.....	12	0
7. Avoid errors in ac- counts	0	10
8. No answer given....	0	2
	—	—
	112	48
Reasons given for purchasing over phone.....		
1. Convenience	29	4
2. Saving of time.....	14	6
3. Saving of trouble....	9	0
	—	—
	52	10

Reasons given for using both methods—	1.	Convenience	19	6
	2.	Necessity of selecting perishables.....	28	0
	3.	Inability to leave home regularly....	10	0
	4.	No answer given....	0	9
			57	15

Quantities Purchased and Reasons

		HOUSEKEEPERS	
		White	Colored
Number who purchase in large quantities.....		115	61
Number who purchase in small quantities.....		53	6
Number who purchase in both large and small quantities.....		58	10
Number who did not answer question.....		3	7
		229	84

Reasons given for purchasing in large quantities.....

1.	Better values.....	45	35
2.	Less trouble.....	14	0
3.	Time saved.....	20	4
4.	More economical....	33	18
5.	Less waste.....	3	4
		115	61

Reasons given for purchasing in small quantities

1.	Prices uncertain.....	4	0
2.	Small family.....	12	0
3.	Small store room..	8	1
4.	Climate hard on groceries	6	0
5.	Prevents thieving..	4	0
6.	Less waste.....	11	0
7.	Fresher groceries..	5	2
8.	Smaller quantities used in cooking....	3	3
		53	6

Reasons for purchasing in both large and small quantities.....

1.	Several reasons.....	12	0
2.	More convenient....	18	4
3.	Keeping qualities of staples, required freshness of perishables	28	0
4.	No answer given....	0	6
		58	10

*Daily Deliveries—Examination of Purchases—Supervision of Pantry Supplies
—Planning of Meals—Financial Method of Making Purchases and Preferential—Financial Method*

	HOUSEKEEPERS	
	White	Colored
Number who have daily deliveries at the home.....	118	32
Number who do not have daily deliveries at the home.....	102	40
Number who did not answer question.....	9	12
Number who have one daily delivery.....	79	12
Number who have two daily deliveries.....	21	5
Number who have three daily deliveries.....	10	8
Number who have four or more daily deliveries.....	1	4
Number who did not give average number per day.....	7	3
Number who give out meals to servants.....	102	11
Number whose servants have free access to pantry.....	90	6
Number who did not answer question.....	37	4
Number who examine purchases for correct weight and meas.	117	50
Number who do not examine purchases for correct weight and measure	102	24
Number who did not answer question.....	10	5
Number who plan meals with regard to nutritive value and proper balance	138	66
Number who do not plan meals with regard to nutritive value and proper balance.....	87	18
Number who did not answer question.....	4	0
Number who purchase by cash.....	95	95
Number who purchase by monthly or weekly credit system.....	71	8
Number who employ both methods.....	62	1
Number who did not answer question.....	1	0
Number who think cash the most desirable method.....	118	77
Number who think monthly or weekly credit system most desirable method	58	4
Number who think combined cash and credit most desirable method	52	1
Number who did not answer question.....	1	2

NOTE—Number who reported having servants, 192.

*Reasons Given for Stated Preference for Financial Method of Making Purchases—Use of "Left-Overs" in Daily Menus
—Remodelling of Clothing*

	HOUSEKEEPERS	
	White	Colored
Reasons given for preference for cash purchasing		
1. Better values.....	51	17
2. Safer	18	14
3. More economical....	35	20
4. Simpler	14	10

	HOUSEKEEPERS	
	White	Colored
Reasons given for preference for purchasing by credit.....	1. More convenient.....	38
	2. Simpler for settlement	3
	3. Incomes available at close of week or month.....	0
Reasons given for preference for combined method of purchasing.....	1. More convenient.....	30
	2. Simpler	5
Number who gave no reason for preference.....	28	19
Number who use "left-overs" to a great extent.....	138	60
Number who use "left-overs" to a small extent.....	64	18
Number who do not have any "left-overs".....	17	6
Number who remodel clothing	148	83
Number who do not remodel clothing	57	1
Number who did not answer question.....	24	0

IV. HOME SERVICE AND TRAINING

The question of expressing an opinion as to what weekly wages would be considered reasonable and just for services trained and untrained in various classes of home work, together with what special periods of freedom from duties should be given to servants were questions that evidently required more consideration and time to answer consistently than the housekeepers felt justified in giving. Among the white housekeepers, so many of these questions were left unanswered that no accurate tabulation could be made of them; but of those who did answer, the stated weekly wages for trained help ranged from \$5.00 to \$10.00 per week and for untrained help from \$3.00 to \$5.00 per week. It is a matter of interest to compare these figures with those submitted by the colored housekeepers.

Again the majority of the white housekeepers answering the question referring to periods of rest consider one afternoon during the week and Sunday afternoon adequate time to be given for freedom from duties.

Rest Periods However, a number expressed the opinion that Sunday afternoon is sufficient. The latter statement may be partially explained by the usual custom of permitting cooks to leave the premises after the mid-afternoon dinner is served. The greater number of colored housekeepers agree with the white ones that one afternoon during the week and Sunday afternoon furnish sufficient rest periods for hired help. Neither white nor colored housekeepers submitted scales of wages for various classes of domestic services. The general terms "trained" and "untrained" proved to be the ones to which they confined their estimates.

The number of hours constituting a reasonable working day varied as much with the white housekeepers as with the colored. However, the former prolong the day somewhat more than the latter. While **Working Day** eight, nine and ten hours are the favorite estimates submitted by both the white and the colored housekeepers, the

greatest number of the former favor a ten-hour day and the greatest number of the latter an eight-hour day.

Comparatively few of the housekeepers have living accommodations for hired help on the premises; but it was stated by several who have such accommodations that it is impossible to secure a servant who is willing to take advantage of this privilege. There are more possible explanations for this than can be stated here. One may be that the colored person is gregarious by nature and separation from the mass of his fellow-beings does not appeal to him; another may be that there is a certain unfounded feeling that a degree of liberty and self-government is surrendered when abode is taken up upon the premises of an employer. In communities where white help prevails, it is the common custom to provide living accommodations and these are accepted as a matter of course.

It is the general opinion of both white and colored housekeepers that the work of a home of moderate size, equipped with labor-saving devices, can be done efficiently by one well-trained servant. The overwhelming opinion in regard to this question should stimulate and encourage efforts to train servants properly and to induce housekeepers to equip their homes with labor-saving devices.

No greater service can be rendered to future society than to give proper moral training and to regulate the habits of the children of today. Parents can co-operate with teachers in no better way than in regulating the hours of sleep, meals, study and recreation of their children. And more important than both of these

is the effect of such training on the child himself. Communities are made up of individuals and upon the moral strength of the individual rests the moral strength of the community. When the community recognizes the paramount importance of proper education of the individual, physically, mentally, morally and spiritually, and grants this education to all, the great social problems of the community will have been solved. It is gratifying to see the large proportion of those who answered the questions relating to the welfare of children making the right beginning with the future citizens of Charleston.

The tabulations of the housekeepers who show their interest in homemaking in various ways speak for themselves. But a word might be said in reference to the comparatively few who have had any special

Training for training in homemaking. If it is true that the home is the Homemaking center from which radiate the influences, for good or evil, upon the social, commercial, industrial and professional walks of life, does it not follow that the homemaker needs very special and comprehensive training in order to understand the meaning of her high calling?

And if so many in the past have been denied this training, may we not take the lesson to heart and hope for the homemakers of the future the opportunity to prove themselves willing and capable of being trained for fit mothers of a true democracy?

HOME SERVICE AND TRAINING

*Reasonable Hours for Working Day—Living Accommodations on Premises—
Care of a Home by one Well-Trained Servant—Duties of
Children in the Home—and Regulation
of Hours of Children*

	HOUSEKEEPERS
	White
Number who consider seven hours a reasonable working day.....	5
Number who consider eight hours a reasonable working day.....	70
Number who consider nine hours a reasonable working day.....	30
Number who consider ten hours a reasonable working day.....	46
Number who consider eleven hours a reasonable working day.....	10
Number who consider twelve hours a reasonable working day.....	24
Number who did not answer question.....	44
	<hr/>
	229
Number who have living accommodations for hired help on premises	31
Number who have no living accommodations for hired help on premises	188
Number who did not answer question.....	10
	<hr/>
	229
Number who think one well-trained servant can do work of home of moderate size equipped with labor-saving devices.....	201
Number who think one well-trained servant cannot do work of home of moderate size, equipped with labor-saving devices	12
Number who did not answer question.....	16
	<hr/>
	229
Number having children who have daily duties to perform.....	93
Number having children who have no daily duties to perform.....	52
Number who have children too young to require performance of any duty.....	32
Number who did not answer question.....	52
	<hr/>
	229
Number having children whose hours are regulated.....	133
Number having children whose hours are not regulated.....	44
Number who did not answer question.....	52
	<hr/>

Home Service and Training—Weekly Wages Considered Just—Periods of Rest and Reasonable Hours for a Working Day

INQUIRIES MADE ON CARDS	Colored
Number who think weekly wages of trained servant should be \$8.00	6
Number who think weekly wages of trained servant should be \$10.00	25
Number who think weekly wages of trained servant should be \$12.00	10

HOUSEKEEPERS

Colored

Number who think weekly wages of trained servant should be \$15.00	15
Number who think weekly wages of trained servant should be \$18.00	3
Number who think weekly wages of trained servant should be \$25.00	8
Number who did not answer question.....	17
	84
Number who think weekly wages of untrained servant should be \$3.50.....	3
Number who think weekly wages of untrained servant should be \$4.00.....	5
Number who think weekly wages of untrained servant should be \$5.00.....	9
Number who think weekly wages of untrained servant should be \$6.00.....	6
Number who think weekly wages of untrained servant should be \$8.00.....	5
Number who think weekly wages of untrained servant should be \$10.00.....	6
Number who did not answer question.....	50
	84
Number who think that periods of freedom from duty should be two afternoons per week.....	30
Number who think that periods of freedom from duty should be one day per week.....	15
Number who think that periods of freedom from duty should be one and one-half days per week.....	7
Number who think that periods of freedom from duty should be one or two hours per day.....	12
Number who did not answer question.....	20
	84
Number who consider 5 hours a reasonable working day.....	2
Number who consider 6 hours a reasonable working day.....	2
Number who consider 7 hours a reasonable working day.....	7
Number who consider 8 hours a reasonable working day.....	40
Number who consider 9 hours a reasonable working day.....	16
Number who consider 10 hours a reasonable working day.....	10
Number who consider 12 hours a reasonable working day.....	5
Number who did not answer question.....	2
	84

Living Accommodations on Premises for Hired Help—Care of a Home by One Well-Trained Servant—Duties of Children in the Home and Regulations of Hours of Children

INQUIRIES MADE ON CARD

	HOUSEKEEPERS
	Colored
Number who have living accommodations for hired help on premises	14
Number who have no living accommodations for hired help on premises	70
	<hr/>
Number who think one well-trained servant can do work of home of moderate size, equipped with labor-saving devices.....	84
Number who think one well-trained servant can not do work of home of moderate size, equipped with labor-saving devices	78
	<hr/>
Number having children who have daily duties to perform.....	6
Number having children who have no daily duties to perform.....	84
Number having no children.....	45
	<hr/>
Number having children whose hours are regulated.....	9
Number having children whose hours are not regulated.....	30
Number having no children.....	84
	<hr/>
Number having children whose hours are regulated.....	44
Number having children whose hours are not regulated.....	10
Number having no children.....	34
	<hr/>
	84

Members of Organizations to Further Interest in the Home Magazines Read and Preference for Special Courses in Housekeeping

INQUIRIES MADE ON CARDS

	White	Colored
Number who belong to organization to further interest in the home	63	22
Number who do not belong to organization to further interest in the home.....	159	62
Number who did not answer question.....	7	0
	<hr/>	<hr/>
	229	84
Number who read magazines devoted to problems of home-making	143	67
Number who do not read magazines devoted to problems of homemaking	61	17
Number who did not answer question.....	25	0
	<hr/>	<hr/>
	229	84
Number who have had special training in some branch of homemaking	27	45

Number who have had no special training.....	179	39
Number who did not answer question.....	23	0
	229	84
Special courses in housekeeping pre-ferred for self.....		
1. Cooking	57	42
2. Home manage-ment	6	22
3. Sewing	34	12
4. Dietetics	11	2
5. Cleaning	3	0
6. Home nursing.....	13	0
7. Millinery	12	0
8. General	18	0
9. All	41	0
10. Laundry	5	0
Special courses in housekeeping pre-ferred for servants.....		
1. Cooking	52	8
2. Housecleaning	61	0
3. Laundry	27	3
4. Waitress	2	0
5. Nursing	0	2
6. Systematic man-age-ment	3	0
7. All	58	1

BUDGETING

To suggest the method of budgeting one's household expenditures is merely to suggest a modern business necessity. When the income of a family is small, the utmost vigilance must be exercised in order to make both ends meet. When the income is large, the same amount of care is necessary to avoid wicked waste. When the income is moderate, wise judgment is needed to insure the proper distribution of the money.

Requirements of families vary to such a degree that no two households with the same income can use precisely the same budget figures. Therefore, in studying any suggested budgets, one's personal requirements and preferences as well as those of all members of the family, will necessitate a modification of the figures as itemized. There are, however, two fundamental principles in budget making: First, the total outlay must in no case exceed the income; and, second, the expenses must be wisely balanced so that every dollar may be used to the best advantage. All successful business enterprises and all properly managed households are conducted with these two principles constantly in mind.

After a budget is made, it is well to follow it as closely as possible for the time it is supposed to cover. For this reason, a weekly or a monthly budget is safest for the homemaker. As occasion arises, one will find it necessary to reapportion some items and thus in time to compile a budget that will clearly represent the wisest expenditure of funds in hand.

Care of Incomes

Budget Principle

Adjusting Budgets

If any part of an apportionment is unexpended, it is well to put it in a saving fund, under its own heading. One may not spend the full apportionment for "clothes" for several months; but there is sure to

Budget come a demand that will overbalance a particular month's

Saving Fund apportionment and if the surplus from previous months has been saved, one's general plan need not be upset. A

winter suit for the husband or wife is often purchased with surplus "clothes" apportionment, saved during the summer months. The same is true of the winter fuel supply. A surplus from the "heat, light and water" apportionment of the summer will most certainly be a welcomed addition to the same column when winter sets in.

In making a budget, it is never wise to stint on the food allowance, particularly if there are children in the household. If food of **Food** a poor quality is bought, such saving is almost invariably **Stinting** offset by increased doctor's bills. It is better for the child, for the community and for future generations, to pay the grocer instead of the doctor.

The accompanying budget was selected at random from a set kept by a housewife in the far west in years just preceding the recent world war. The prevailing prices for all commodities at that time were so

Sample much lower than at the present time that an adaptation to **Budget** present conditions would be necessary if such a schedule were adopted now. This budget permitted a family of three adults and one child to live in an attractive section of the city in a well-built, modern home of seven rooms, a tiled bath room and a furnished attic and basement, and a kitchen and pantry fitted with labor-saving devices. The house was furnace-heated and the basement contained modern laundry equipment. The surroundings and fittings of the home were conducive to the maintenance of a life of refinement and comfort. The expenditure of the monthly income as suggested by the budget did much to increase the welfare of the inmates of the home as well as to permit the fulfillment of all needs in an entirely adequate manner.

ACTUAL BUDGET FOR APRIL, 1912—ALLOWANCE \$150.00 PER MONTH

MONTHLY EXPENSE ACCOUNT (MONTH OF)—Continued

	Income	Spent for food	Spent for clothing	Put in savings	Spent for rent	Spent for operating	Spent for recreation, education	Given to church, charity	Spent for health
24									24
25									25
26									26
27									27
28									28
29									29
30									30
31	Total								31

Summary	Last Month	This Month	Next Month
Estimated expenses			
Actually spent			
Difference			

SUMMARY OF FINDINGS

1. Household conditions in Charleston are rapidly changing.
2. The service problem is becoming more acute.
3. Increased wages and living costs are forcing interest in better quality and less quantity of service.
4. Improved interior arrangements and use of labor-saving devices are necessary.
5. Housekeeping must be regarded as a serious business. Most housekeepers would like to be shown how to place housekeeping on a systematic, scientific basis.
6. All girls should be given general training in household arts.
7. High school and industrial school girls should be given specific training in planning meals, budgeting incomes, marketing, the use of labor-saving devices, interior home arrangement, and household management.
8. Household employment is an honorable and important occupation and many girls should be encouraged to take training for efficiency in such employment and go into the occupation.
9. Thorough training for homemaking is essential to the stability and safety of a democracy founded upon the home.
10. Provision should be made in the schools for training in household arts adult women out of school in afternoon and evening classes.

A HOUSEKEEPING EXAMPLE

The following authentic account of how a certain housekeeper who realized the importance of system and business methods in household management met with success may suggest some practical ideas to others similarly inclined.

The monthly income of the family in question, consisting of three adults and a small child, was two hundred dollars. Even before the cost of commodities reached their present high level, this sum demanded careful handling and much forethought to give the results needed to maintain a comfortable, attractive home in accord with standards of gentility and refinement and to leave a fair amount for the monthly saving account. In the locality where the family resided there was a great scarcity of servants with the result that usually follows when the supply is not sufficient to meet the demand, namely: trained servants commanded very high wages. However, through the local paper, the housekeeper secured the services of a foreign-born maid for a day and a half each week, paying her the prevailing price of twenty-five cents per hour for her work. In the twelve hours of service rendered, this maid completed the entire week's laundry and did the heavy weekly house cleaning. It must be understood that the home was of moderate size, seven rooms, bath, pantry, attic and furnished basement and was equipped with modern labor-saving devices. Aside from the work done by the maid in the day and a half, all other household duties were performed by the housekeeper. When one considers the large proportion of a mother's time demanded by a year old baby, one can appreciate how necessary it was to employ system in this household of four in order to have all the wheels run without friction and for the mother to have time for sewing; for taking the baby out for his daily airing and for a reasonable period of rest and recreation.

After a time, the following arrangement was made with the very com-

petent foreign-born maid. She retained all of the outside day work she had engaged, but in return for her room, her morning and evening meals and a very small sum in addition to the original twelve hours per week's pay she gave all of her unemployed time to the housekeeper. She was in the home three entire days of the week; each morning until eight-thirty and each afternoon after four-thirty. She was quick, thorough and interested in her work and though giving this proportionately small amount of her time, she relieved the mother of the home of almost all of the daily household tasks. All of the cooking was done by the latter who by chance enjoyed the creative feature involved in the work and who felt that she could do the work much more economically than any servant would.

A carefully worked-out system of routine duties was the key-note of this woman's contentment of mind and joy in her daily home life. She was no slave to rules for she realized that such a condition would soon kill all interest, but she insisted upon maintaining regular meal hours, well-planned meals, regular times for ordering and marketing, regular cleaning and mending days, and a place for everything with everything in its place. She learned by experience that quite the easiest time for planning meals was during the period she was getting the late dinner. While moving about among her pantry supplies, she not only noted what items needed replenishing the following day but also planned her breakfast, luncheon and dinner in advance, thus completing her marketing and ordering list with apparently little effort. She learned that early morning was the propitious time for her ordering and marketing. At that time the stores and markets are not crowded; the clerks are wide awake and interested and the food is most tempting, not yet having been handled or picked over by other purchasers. She purchased in large quantities whenever it was practicable for she found this most economical. She found that the purchasing of cooked meats and other prepared foods was one of the most expensive of luxuries; she therefore prepared her own hams, tongues, veal loaves, etc.; she baked her own bread, cakes, pies and cookies. There were regular market days when this housekeeper, with her basket on her arm went from stall to stall selecting her own food instead of having it selected for her by the salesman whose chief interest is legitimately his own profit. It is true she found that it required time and energy to do one's own marketing, especially when by sitting down in a comfortable chair at the telephone one can attend to all the ordering for the day in a few moments. However, it was not convenience but economy that she had in mind. When ordering was done, the purchases were weighed on correct scales and any shortage of weight was immediately reported. In a short while, the dealers from whom the housekeeper made her purchases realized she was in earnest and thereafter showed their respect for her business-like methods. By budgeting the income and by keeping a book of household expenditures she, in time, learned the correct apportionment of expenditures which simplified her planning materially.

And now, lest it might be concluded that this woman's entire thought and attention were given to the culinary department of the home, it is an actual fact that by ten o'clock, even on market days, she was ready to give her attention to other equally important demands upon wife and mother and house-keeper. Ten was the hour for the baby's bath, after which, fortunately for the mother, he slept two or three hours. During these hours extra sewing,

baking, writing, etc., could be accomplished without interruption. Because this woman filled her morning hours with systematic work, she felt free to spend the hours between luncheon and the preparation of dinner in some relaxation of mind and body. This was the time for the daily walk with the baby, for informal calls, for the entertaining of guests and for reading. But the choicest hours of her long, busy days came last. With dinner over, the baby tucked away for the night and with the quiet of the evening about them, she found her greatest joy in company with the man of the house, who read aloud from current magazines or from some good book while she busied herself with some bit of hand-work. Occasional trips to the theater or to lectures gave a needed variety to these hours of recreation; but for genuine enjoyment she found the quiet hours in her own home furnished the deepest, the truest and the best.

MENUS

In planning the following groups of menus, the question of nutritive value and proper balance was the foundation of the combinations. The proper proportions of carbo-hydrates, proteins, fats, minerals and "roughage" for the daily needs of the body were incorporated in a day's food supply. A food in which vita-nimes abound was included in at least one meal per day.

The second group of menus submitted is simpler than the first and the third group is the simplest of the three. In all, however, proper nutritive qualities and proper balance is represented. For example, in group III there is a dinner menu which contains no meat. The food elements supplied by meat is protein; and as this same element abounds in beans, there is no real need for meat and baked beans in the same meals. It will be noted that the breakfast which just precedes the baked-bean dinner, contains broiled steak. This suggestion is made for the person who feels that something is lacking in his food supply if meat is omitted for a single day.

These menus are, of course, only suggestive and are subject to many modifications. Certain foods included are obtainable only in the spring and summer months and others are distinctly winter foods. By substituting a food of similar nutritive value, obtainable in its respective season, many variations may be obtained. Often there are "left-overs" from dinner that can be employed in making appetizing and nutritious luncheon or supper dishes.

It will be noted that groups I and III contain menus for breakfast, dinner and supper, while group II schedules breakfast, luncheon and dinner. The prevailing custom of the early dinner hour in Charleston, suggests the practical value of groups I and III. The evidently gradual change to the late dinner hour, which prevails elsewhere and which seems very desirable for many reasons, makes probable an approaching need for suggestions to be found in group II. In the majority of cases supper menus will lend themselves to luncheons both being lighter meals than dinner.

No special emphasis could be placed on the great value of milk in the diet of the child in making the groups of menus; but opportunity will be taken here to stress this fact. In the diet of small children, milk should form the central article around which other foods should be grouped. At least, one quart of milk a day should be given to each child under five. With larger children, even those in the grammar grades, milk should hold an important place in the diet. Not only should it be taken in the liquid form but in

various combinations, such as custards, ice-cream, etc. If all growing children were required to drink a glass of fresh sweet milk or buttermilk at each meal the great problem of the under-nourished child would be on a fair way to its solution.

SUGGESTIVE MENUS FOR MEALS

GROUP I

Sunday Morning Breakfast

Grape fruit
Oatmeal with cream
Eggs and breakfast bacon
Hashed brown potatoes
Muffins
Coffee

Sunday Dinner

Oysters on half shell
Celery, saltines, olives
Clear soup
Roast chicken with dressing
Boiled rice, candied yams, cranberry sauce
Cornbread
Sliced tomatoes on lettuce
Mayonnaise, crackers
Apple pie with cheese
Coffee

Sunday Supper

Broiled lamb chops, with green peas
Mashed potatoes
Hot rolls
Shrimp salad
Crackers
Canned peaches and cakes
Tea or coffee or cocoa

Monday Breakfast

Orange
Hominy with fried chicken or broiled steak
Fried potatoes
Hot biscuits or hot rolls
Coffee

Monday Dinner

Celery, oyster cocktail, olives
Soup
Roast leg of lamb
Mashed potatoes, currant jelly

Corn, stewed tomatoes
Asparagus on lettuce
Mayonnaise, crackers
Ice cream, cakes, coffee

Monday Supper

Cold sliced lamb, creamed fruit fritters
Sweet breads, Lyonnaise potatoes, celery
Sliced tomatoes on lettuce
Mayonnaise, crackers
Charlotte Russe
Coffee, tea or cocoa

Tuesday Breakfast

Grape fruit
Cereal with cream
Hominy, broiled lamb chops or bacon and eggs
French fried potatoes
Toast, coffee
Hot cakes and syrup

Tuesday Dinner

Crab or lobster cocktail
Relishes, crackers
Bouillon
Roast ribs of beef with brown gravy
Rice, string beans, corn or creamed asparagus
Hot rolls, baked apples
Waldorf salad on lettuce
Crackers
Plum pudding with sauce, coffee

Tuesday Supper

Salmon croquettes
Creamed potatoes, spinach, hot rolls, guava jelly
Banana and nut salad
Canned cherries and cake
Coffee, tea or cocoa

GROUP II

Breakfast

Grape fruit
 Oatmeal with cream
 Eggs
 Hashed brown potatoes
 Muffins
 Coffee

Luncheon

Broiled lamb chops
 Green peas
 Hot rolls
 Tea, coffee, milk or cocoa
 Berries and wafers

Dinner

Clear soup
 Roasted chicken with dressing
 Boiled rice,
 String beans
 Sliced tomatoes on lettuce
 Apple pie
 Coffee

Breakfast

Orange
 Hominy
 Crisply fried bacon
 French fried potatoes
 Hot biscuit
 Coffee

Luncheon

Creamed chicken (left over from
 previous day)
 Asparagus
 Corn sticks
 Tea, coffee, milk or cocoa
 Canned peaches

Dinner

Cream of tomato soup
 Leg of lamb
 Mashed potatoes
 Currant jelly
 Corn
 Hearts of lettuce and mayonnaise
 Ice cream

Breakfast

Fresh fruit
 Cream of wheat and cream
 Eggs
 Toast
 Coffee
 Griddle cakes and syrup

Luncheon

Cold sliced lamb (left over from
 previous day)
 Potato salad
 Currant jelly
 Hot rolls
 Cocoa or tea
 Sliced oranges

Dinner

Cream of celery soup
 Broiled porterhouse steak
 Macaroni
 Baked sweet potatoes
 Asparagus salad
 Fruit compote
 Wafers

Breakfast

Fresh fruit
 Hominy
 Broiled lamb chops
 Hot biscuit
 Coffee

Luncheon

Sweet breads
 Fruit fritters
 Lyonnaise potatoes
 Tea or cocoa
 Lemon gelatine
 Layer cake

Dinner

Bouillon
 Baked stuffed shad
 Mashed potatoes
 Spinach
 Waldorf salad
 Charlotte Russe

GROUP III

<i>Breakfast</i>	<i>Breakfast</i>
Oat meal	Hominy
Baked Irish potatoes	Shrimp or broiled fish
Fried bacon	Corn muffins
Flour muffins	Coffee
Coffee	
<i>Dinner</i>	<i>Dinner</i>
Brisket stew	Corn beef
Boiled rice	Cabbage
String beans	Boiled Irish potatoes
Corn bread	Corn bread
Stewed prunes and cookies	Fresh fruit or berries
<i>Supper</i>	<i>Cookies</i>
Creamed chipped beef	
Hominy	Creamed eggs
Bread	Baked potatoes
Tea or milk	Bread
Preserves or jam	Tea or cocoa
<i>Breakfast</i>	<i>Sliced bananas</i>
Hominy	
Broiled steak	<i>Breakfast</i>
Biscuit	Stewed fruit
Coffee	Baked Irish potatoes
<i>Dinner</i>	Fish roe
Clam chowder	Corn muffins
Boston baked beans	Coffee
Boston brown bread	
Sliced beets	<i>Dinner</i>
Apple pie	Cracked pea soup
<i>Supper</i>	Shoulder of lamb
Potato salad	Boiled rice
Sliced tomatoes	Green peas
Rolls	Currant or apple jelly
Cocoa or milk	Bread
Marmalade	
<i>Breakfast</i>	<i>Supper</i>
Cream of wheat	Hominy
Eggs and bacon	Escalloped lamb (left over from
French fried potatoes	shoulder)
Rolls	Sally Lunn
Coffee	Cocoa
<i>Dinner</i>	
Roast of pork	<i>Breakfast</i>
Boiled rice	Hominy
Apple sauce	Calf's liver and bacon
Spinach	Hashed brown potatoes
Corn bread	Toast
Chocolate pudding	Coffee
<i>Supper</i>	
Cold sliced pork	<i>Dinner</i>
Creamed potatoes	Broiled or baked fish
Bread	Mashed potatoes
Cocoa	Okra and tomatoes
Marmalade	Corn bread
	Stewed fruit
	Cookies
<i>Supper</i>	
Cold sliced meat	
Fruit salad	
Rolls	
Cocoa	
Jam	

A SUGGESTIVE LIST OF LABOR-SAVING DEVICES

For the Kitchen

1. Gas or electric range
2. Fireless cooker
3. Steamer
4. Canning outfit
5. Kitchen cabinet
6. Porcelain top table
7. Power dish washer
8. Bread mixer
9. Food chopper
10. Draining basket for dishes
11. Soap shaker
12. Dish mop
13. Plate scraper
14. Coffee percolator

For the Dining Room

1. Rolling tea wagon
2. Vacuum water bottle
3. Electric disc stove
4. Electric percolator
5. Electric toaster
6. Electric waffle irons
7. Electric hot water kettle

For the Laundry

1. Stationary laundry tub
2. Wringer
3. Power washing machine
4. Electric or gas irons
5. Clothes boiler on gas plate near tubs
6. Folding clothes horse
7. Folding ironing board
8. Large clothes hamper
9. "Simplex" ironer
10. Bag or basket for clothes pins

For General Use

1. Vacuum cleaner
2. Carpet sweeper
3. Floor mop
4. Dustless duster
5. Electric heating pad
6. Electric radiator
7. Electric fan

The following bibliography furnished by the librarian of the Federal Board for Vocational Education of Washington is very comprehensive and suggestive.

It includes subject matter upon nearly all phases of homemaking and in a number of instances the specific value of the book is mentioned. From such a general list as is here presented, any woman, genuinely interested in up-building and strengthening the weak places in her household management, can find much that is of value and benefit. It would be well to study this bibliography in detail, if for no other purpose than to realize the varied lines of homemaking considered by experts to be of sufficient importance to warrant a treatise upon the subject.

HOME MANAGEMENT

The Business of Home Management. Pattison, Mary. McBride & Co. \$2.00.

The Business of the Household. Taber, C. W. Lippincott. \$2.00. Value as reference work for both teachers and high school students.

Cleaning and Renovating in the Home. Osman. Home Economy Book Co., Wilmette, Illinois. Enl. ed., \$1.20.

The Cost of Cleanliness. Richards. Wiley. \$1.00.

The Cost of Food. Richards. Wiley. \$1.00.

The Cost of Living. Richards. Wiley. \$1.00.

The Cost of Shelter. Richards. Wiley. \$1.00.

The Economic Function of Women. Devinne. Teachers College, Columbia University (Technical Education Series). \$0.10.

Family Expense Account. Brookman. Heath. \$0.65.

The Fuels of the Household. White. Whitcomb and Barrows. \$0.75.

Foods and Household Management. Kinne and Cooley. Macmillan. \$1.10.

A Guide to Laundry Work, Manual for Home and School. Chambers. Boston Cooking School Magazine Co. \$0.75.

The Home and Its Management; a Handbook on Homemaking with Three Hundred Inexpensive Receipts. Kittredge, Mabel Ryde. Century Co. \$1.59.

The Household Budget. Leeds, John B. The Author, 234 W. School Lane, Germantown, Philadelphia. \$1.50. Written from the standpoint of the economic value of woman's work. Valuable as an indication of the trend of the times.

Household Engineering. Frederick, Christine. American School of Home Economics. \$1.50.

Household Management. Nesbitt, Florence. Russell Sage Foundation. \$0.75. \$0.75.

Household Management. Terrill. American School of Home Economics. \$1.50.

Housekeeper's Handbook of Cleaning. McLeod. Harper. \$1.00.

Housewifery. Balderston, L. Ray. Lippincott. \$2.00.

Increasing Home Efficiency. Bruere. Houghton. \$1.50.

Laundering. Balderston. The Author, 1224 Cherry St., Philadelphia. \$1.25.

Manual of Homemaking. Van Rensselaer and Others. Macmillan. \$2.50. Intended for rural housewives. Good index makes it a handy reference manual.

Marketing and Household Manual. Donham, S. Agnes. Little, Brown & Co. \$1.50.

A Manual of Household Accounts. Crandall, J. Chester and Mercy F. Whitcomb, and Barrows. \$2.00. Suggestive for teachers of home management.

The New Housekeeping. Frederick. Doubleday, Page & Co. \$1.00.

Practical Laundry Work. Wetenhall. Dutton & Co. \$1.00.

The Science of Homemaking. Pirie. Scott, Foreman. \$0.90.

The Standard of Living Among Industrial People of America. Streightoff. Houghton. \$1.00.

A Survey of Your Household Finances. Andrews. Teachers College, Columbia University (Technical Education Series). \$0.10.

Thrift in the Household. Lothrop, Dora Morell Hughes. Lee and Shepard Co. Suggestive to home economic teachers, offering practical suggestions for thrift.

Table of Contents

	Page
Preface	2
1. Origin of the Survey:	
a. General Survey Committee.....	5
2. Charleston as an Industrial City.....	7
3. Purpose of the Survey.....	8
4. Charleston Public Schools:	
Outline of Work (White Schools):	
1. Commercial Work	9
2. Industrial Work	9
3. Teaching Staff	10
4. Time Element	10
5. Rooms and Equipment.....	11
Outline of Work (Colored Industrial Schools):	
1. Carpentry	11
2. Agriculture	12
3. Laundry	13
4. Domestic Science	13
5. Sewing	14
Outline of Work (White Elementary Schools):	
1. Manual Training	14
2. Domestic Science	14
Outline of Work Memminger (Girls) High School:	
1. Domestic Science	15
2. Domestic Art	15
3. Commercial Course	16
Outline of Work (Boys) High School of Charleston:	
a. Industrial Department:	
1. Wood Shop	17
2. Pattern Making	18
3. Mechanical Drawing	18
4. Electricity	18
5. Laboratory	18
6. Trigonometry	18
7. Mechanics	18
8. Mensuration	18
b. Commercial Department	19
5. Tabulation—Results of Census taken during Summer of 1919:	
1. Compulsory attendance age.....	20
2. Memminger School, 1918-1919.....	20
3. Ages of Boys, total white, elementary schools.....	21
4. Ages of Girls, total white, elementary schools.....	21
5. Elimination Table	22

INDUSTRIAL

	Page
1. Purpose	25
Excerpts from Resolutions adopted by Board of Public School Commissioners.	
Desire for Vocational Education.	
2. Methods	25-27
Activities of the Survey.	
Selection of occupation for training purposes.	
Helping the industries to grow.	
Why training is suggested.	
3. Scope	27-28
Industries visited but not studied.	
Industries omitted from the Survey.	
Industries surveyed.	
Recruiting the trades.	
4. Recommendations regarding Day, Part-time and Evening Instruction.....	32
Educational approaches.	
Day and Part-time instruction.	
Evening instruction.	
5. Recommendations as to kind and character of classes.....	32-33
Building trades.	
Metal trades.	
Ship Yard trades.	
Electrical trades.	
Automotive trades.	
Printing trades.	
Textile trades.	
Woodworking trades.	
6. Organization and Conduct of Evening School Work.....	34
Careful preparation for the work.	
7. Part-time Instruction	34-36
Equipping the work.	
Related subject work.	
8. Combination Courses	36-38
Shipyard and Metal Trade Workers.	
Printers.	
Textile Workers.	
Building Trades Men.	
Draftsmen.	
Auto Mechanics.	
Examples of combination classes.	
9. Recommendations as to content of Courses.....	38-40
Draftsmen.	
Machinists.	
Sheet Metal Workers.	
Pattern Makers.	
Carpenters.	
Bricklayers and Masons.	
Plumbers.	

Electrical Workers.	
Motor Mechanics.	
Oxy-Acetylene Welders.	
Ship Joiners.	
Pipe Fitters.	
Electricians.	
Molders.	
Boilermakers.	
Vulcanizers.	
Printers.	
Textile workers.	
10. Women in Industry.....	28-30
Variety of work done by women.	
Selection of courses.	
Mechanical drawing and tracing.	
Power machine operating.	
11. Administration, Supervision and Instruction, with Recommendations....	30-31
Teaching Force.	
Supervision.	
Advisory Committee.	
Industrial Co-ordinator.	
12. Summary of Recommendations.....	73-74
13. Survey Findings	46
Summary of the survey of the Metal, Electrical and Navy Yard Trades	41-43
Summary of the survey of the Automotive Trades	43-44
Summary of the survey of the Building Trades	44-45
Summary of the survey of the Printing Trades	45
Summary of the survey of the Textile Industry	46
Hours and wages in the Building Trades.....	47
Hours and wages in the Navy Yard, Ship Building and Metal Trades. 48	
14. Description of Occupations	55-72
Navy Yard Trades.	
Building Trades.	
Metal Trades.	
Automotive Trades.	
Printing Trades.	
15. Equipment	48-55
Drafting.	
Mathematics Laboratory.	
Machine Shop.	
Sheet Metal Shop.	
Plumbing and Steamfitting Shop.	
Woodworking Shop.	
Electrical Construction and Repair Shop.	
Auto Repair and Gas Engine Shop.	
Oxy-Acetylene Shop.	
Vulcanizing Shop.	
Printing Shop.	

COMMERCIAL.

	Page
PART I—	
1. Purpose	75
2. Plan of Procedure.....	75
3. Acknowledgment	75
PART II—Study of Survey Data :	
1. Distribution of Employees among Commercial Positions.....	76
2. General Education of Employees.....	76
3. Business Education of Employees.....	77
4. Length of Employment in Present Positions.....	79
5. A Definite Promotional Plan among Business Concerns.....	80
6. Schools of Instruction or Supervision of Education of Younger Employees by Business Concerns.....	82
7. Supply of Competent Salespeople	83
8. Supply of Competent Stenographers	85
9. Supply of Competent Bookkeepers	88
10. Supply of Dictating Machine Operators.....	89
11. Instruction in Typewriting.....	90
12. Instruction in the Use of Office Appliances.....	90
13. Sources of Supply in which Employees are Obtained.....	91
14. Range of Salaries Paid.....	91
15. Subjects which Business Men would emphasize in Training of Prospective Employees	93
16. Foreign Trade Training.....	94
17. Recapitulation	94-96
18. Recommendations	96-98
PART III.—Table and Diagrams.	
1. Table No. 1.—Distribution of Employees of all Ages among Commercial Positions as Reported by 82 Employers.....	99
2. Table No. 2.—Distribution of Men and Women under 26 years of age in Terms of Age and Position, as Reported by Employees	100
3. Table No. 3.—Distribution of Employees under 26 years of age among Commercial Positions as Reported by Employers.....	101
4. Table No. 4.—General Education of Commercial Employees.....	102
5. Table No. 5.—Business Education of Commercial Employees.....	102-103
6. Table No. 6.—Commercial Employees under 26 years of age with and without Business Education.....	103
7. Table No. 7.—Study of Business Training Received in Schools with reference to Kind of Position in which now employed.....	104
8. Table No. 8.—Length of Employment of Commercial Employees in Present Positions.....	104
9. Table No. 9.—Study of Length of Employment in Present Positions of Men Employees under 26 years old, as Reported by Employees	105
10. Table No. 10.—Study of Length of Employment in Present Positions of Women Employees under 26 years old, as Reported by Employees	105

	Page
11. Table No. 11.—Study of Continuation School Courses Desired with Reference to Position Held by Employees.....	105-106
12. Table No. 12.—Study of Continuation School Courses Desired with Reference to Demand for Each.....	106
13. Table No. 13.—Age Distribution of Commercial Employees.....	107
14. Table No. 14.—Combination Positions and Kinds of Business in which Found	107
15. Tables Nos. 15-27, inclusive.—Study of Range of Salaries Paid with Regard to Minimum Age, Education and Experience Requirements	108-112
a. Stenographer	108
b. Typist	108
c. Assistant and Head Bookkeeper.....	109
d. Entry Clerk	109
e. Ledger Clerk	109
f. Bookkeeping Machine Operator.....	110
g. Store Cashier	110
h. Billing Clerk	110
i. Retail Salesperson	111
j. Stock Clerk	111
k. Receiving Clerk	111
l. Shipping Clerk	112
m. General Clerk	112
Table No. 28.—Length of Business Education Stenographers have had	113
Table No. 29.—Classification of Business Concerns which Replied to Questionnaire	113
Diagram No. 1.—Study of Relative Number of Men and Women of all Ages Employed in Major Commercial Positions.....	114
Diagram No. 2.—Study of Relative Number of Men and Women below 26 years old employed in Major Commercial Positions.....	115
Diagram No. 3.—Study of the Distribution of Employees of all Ages among Major Commercial Positions.....	116
Diagram No. 4.—Study of the Distribution of Employees under 26 years old among Major Commercial Positions.....	117
Diagram No. 5.—Study of General Education of Commercial Employees of all Ages.....	118
Diagram No. 6.—Study of Business Education of Commercial Employees of all Ages.....	119
Diagram No. 7.—Study of Length of Employment in Present Positions of Commercial Employees of all Ages.....	120
Diagram No. 8.—Study of Commercial Labor Turnover in the last 12 months as Reported by Employers.....	121
APPENDIX—	
1. Employers' Questionnaire	122-123
2. Employees' Questionnaire	123-124
HOUSEKEEPING	
1. Introductory	125
2. The Purpose of the Survey.....	128

	Page
3. Practical Value of Survey.....	127
4. Questionnaires	129-130
5. Occupations of Heads of Families.....	131-132
6. Domestic Employment	133
7. Number of Families of Specified Size.....	135
8. Domestic Employment	135-136
Number of Servants Employed.	
Preference and Ability to Secure Efficient Service.	
Unsatisfactory Situation attributed to Specified Cause.....	136
Usual Method of Securing Servants.....	136
9. Housekeeping regarded as a business Proposition and Interest in placing Homemaking on a Systematic Basis.....	136-137
10. Home Organization	137-140
11. Houses Equipped with Labor-saving Devices.....	141
12. Foods and Purchasing	142-146
Quantities Purchased and Reasons.	
Daily Deliveries, Examination of Purchases.	
13. Reasons given for Stated Preference for Financial Method of Making Purchases; Use of "Left-Overs" in Daily Menus.....	146-147
Remodeling of Clothing.	
14. House Service and Training.....	147-152
15. Budgeting	152-156
16. A Housekeeping Example.....	157-159
17. Menus	159-160
18. Suggestive Menus	160-162
19. Labor-saving Devices	163
20. Suggestions for Housewives.....	163
21. Bibliography	163-164

Index

	Page
Acetylene Welding	33, 55, 68
Activities of Survey.....	25
Ages	76
Agriculture (Colored)	12
Anglesmiths	55
Appendix	122-124
Assisting Industrial Growth.....	27
Automotive Trades	33, 54, 67
Bibliography	163-164
Boat Builders	55
Boilermakers	33, 39, 56, 65
Bookkeepers	88
Bookkeeping Machines	89
Bricklayers	33, 39, 61, 62
Budgeting	152-156
Building Trades	61
Cabinet Making	33, 62
Carpentry	11, 12, 33, 39, 56, 61
Calkers	56
Car Repairer	66
Census, Summer of 1919.....	20
Census, Memminger School	20
Census, Boys' Elementary, White.....	21
Census, Girls' Elementary, White.....	21
Census, Boys', Colored	21
Census, Girls', Colored	21
Charleston as an Industrial City.....	7
Charleston Public Schools.....	9
Chippers	56
Classes, Kind and Character.....	32-33
Combination Courses, Examples.....	36, 37, 38
Commercial Department (Curriculum)	19
Commercial Work	9, 16, 17, 90
Committee, General Survey.....	5
Committees, Sub	6
Committees	31, 93, 125
Compulsory Attendance Age.....	20
Co-operation of Business and School.....	81, 82
Co-ordinator	31
Coppersmiths	56
Courses recommended	38
Cost Estimating	
Domestic Employment	133, 137, 148
Domestic Science (Colored)	13-14
Domestic Science (White) Elementary.....	14
Domestic Science (White) High.....	15

	Page
Domestic Arts (White) High.....	15
Diagrams, 1-8	114-121
Dictating Machines	89
Drafting	32, 38, 49, 64
Drillers	57
Education of Employees.....	77-78
Electrical Laboratory	18
Electrical Work	33, 39, 52, 53, 57, 64
Electricity	18
Elimination Table, Memminger High School (Girls).....	22
Elimination Table (Girls).....	22, 23
Elimination Table (Boys).....	23
Elimination Schedule (Colored)	24
Equipment, Evening Schools.....	35, 36
Equipment and Rooms.....	11, 49
Essentials for Advancement.....	93
Evening School	34, 36
Extent of Survey.....	130
Findings	46
Fireless Cooking	139
Foods	142
Foreign Trade Training	94
Garbage Disposal	138, 139
General Course	40
Home Arrangement	126, 127
Homes	137, 138
Housekeeping Examples	157, 158, 159
Housekeeping, Survey of.....	125
Industrial Work	9, 17, 18
Industries, Survey of.....	25
Industries, Visited, Omitted, Surveyed.....	27-28
Industries, Women in.....	28-30
Instruction, Day, Part-time, Evening.....	32, 34
Joinery	33
Labor-saving Devices	139, 141, 163
Laundry	13, 139
Loftsmen	57, 58
Lithographing	55
Living Accommodations	148, 151
Machine Shop Work.....	32, 38
Machinists	58, 65
Masons	33, 39
Manual Training (White), Elementary.....	14
Mathematics	18, 38
Mathematical Laboratory	49, 50
Mechanical Drawing	18, 38, 39
Mechanical Drawing for Women.....	30
Mechanics	18
Menus	143, 144, 159, 162

	Page
Metal Trades	64
Meter Reading	138
Methods of Purchasing.....	142, 144, 145, 146, 147
Methods of Survey.....	25
Molders	32, 39, 59, 66
Navy Yard Trades.....	55
Occupation, Selection of.....	27
Occupation, Description of.....	55
Occupations	131, 132
Organization, Home	137, 140, 143
Origin	5
Painters	59, 64, 66
Pattern Making.....	18, 32, 38, 60, 65
Pipe Fitters	60, 66
Plasterer	62
Plan Reading.....	39
Plumbing and Steam Fitting.....	32, 39, 53, 54, 60, 62
Power Machine Operating.....	30
Printing	33, 40, 55, 69
Printing Trade	69, 72
Promotional Plan	80
Punching and Shearing.....	60
Purpose of Survey	8
Purpose of Survey of Industry.....	25
Purpose of Survey of Business.....	75
Purpose of Survey of Housekeeping.....	128
Questionnaire, Employers'	122, 123
Questionnaire, Employees'	123, 124
Questionnaires	129, 130
Recommendations	96-98
Repetition (Elementary White Schools).....	24
Repetition (Industrial Colored).....	24
Resolutions	25
Rest Periods	147
Riggers	60
Riveters	61
Rooms and Equipment.....	11
Scope of Survey.....	27
Salaries	91
Servants	125
Sewing (Colored)	14
Sheet Metal Work.....	32, 38, 50, 51, 61, 63
Ship Fitters	61
Ship Joiners	33, 39, 57
Source of Obtaining Employees.....	91
Stability of Employment	79
Steam Fitting and Plumbing.....	32, 39, 62
Stenographers	85, 86, 87
Summary of Findings.....	94, 96

	Page
Summary, Metal, Electricity, Navy Yard, Automotive, Building, Printing and Textile Trades.....	41-46
Summary of Recommendations.....	73-74
Teaching Staff	10
Tables (1-29)	89-113
Taxes	137
Textile Industry	33
Textile Workers	40
Thrift	144
Time Element.....	10, 11, 47, 48, 147, 148, 149
Trades, Recruiting	28
Training	27, 148
Trigonometry	18
Typewriting	90
Value of Survey.....	127, 128
Vocational Education, Desire for.....	25
Vulcanizing	33, 40, 54, 55, 67
Wages	47, 48, 126, 147, 149, 150
Weights and Measures.....	143
Welding	39
Wiring	64
Women's Classes, Administration, Supervision, Instruction.....	30, 31
Women in Industry.....	28-30
Wood Pattern Making.....	65
Wood Shop	17, 51-52
Wood Turning	17
Woodworking	64, 66
Work, done by Women.....	29



UC SOUTHERN REGIONAL LIBRARY FACILITY



AA 001 036 384 4

